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T R E A T I S E  
ON THE  
H Y D R O C E L E:

CONTAINING  
AN EXAMINATION OF ALL THE USUAL METHODS  
OF OBTAINING RELIEF IN THAT DISEASE.

THE  
RADICAL CURE BY INJECTION

IS PARTICULARLY DESCRIBED,  
AND ILLUSTRATED WITH CASES.

SECOND EDITION,  
WITH A PREFACE, AND ADDITIONAL CASES.

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By *JAMES EARLE, Esq. F.R.S.*  
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1796.

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T O  
WILLIAM AUSTIN, M. D.

S I R,

*PERMIT me to have the honor  
of inscribing to you the following treatise, which was  
submitted in manuscript to your perusal.*

*The approbation of so distinguished a judge of gene-  
ral literature, and more particularly of every branch of  
medical knowledge, could not fail of being highly grate-  
ful and encouraging to the writer.*

*I am, S I R,  
with great esteem,  
your much obliged  
and most obedient servant,*

JAMES EARLE.

Hanover Square,  
July 20, 1791.

TO  
WILLIAM AUSTIN, M.D.

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I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the following matter, which was referred to me by the Board of Trustees.

The application of the Trustees of the University of California, for the purpose of securing the right of way for the proposed extension of the University of California, is hereby approved, and the same is hereby authorized to be carried out, and the necessary steps to be taken for the purpose of securing the same.

I am, Sir, very respectfully,  
Your obedient servant,  
J. M. Smith

W. A. Austin, M.D.  
University of California  
Berkeley, Cal.



## PREFACE.

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THE improvements in Surgery, within the present century, are undoubtedly numerous and of considerable importance; but as the art is still progressive it seems the duty of every practitioner to memorise whatever by experience he finds useful, and to endeavour to increase a fund of knowledge which successive observations have gradually accumulated. Yet he who ventures to introduce any method which custom has not familiarised must expect the opposition of habit and prejudice, and after all his pains will not infrequently find his intentions frustrated by misconception or misrepresentation: such re-

flexions result from the perusal of a treatise on the hydrocele not long since published at Edinburgh, which contains some observations on “ A late attempt to bring forward “ again the use of Injections for the cure of “ Hydroceles, which has been long disused “ in this country.”

This summary definition appears to be intended to characterize a treatise which I had published on that subject, in which the whole of the attempts to bring it forward consists in relating my reasons for using injection in that disease—a description of the means employed—an exact statement of the progress made, and of the cures effected by it; all which are unreservedly laid open and submitted to the opinion of others, with no further claim to credit than that which their observation may allow and their experience confirm.

The motives which induced me to prefer the cure by injection are said by this author to arise from a dread of the operation by incision.

cision. I own I have a dread of it, as I ever shall have of giving unnecessary pain. Having long had the care of a large hospital in this metropolis, my practice has been open to public observation; and though I have ever most studiously endeavoured to lessen the necessity of operations, no one, I am confident, will accuse me of shrinking from any which I am convinced will prove advantageous to the patient. Incision for the cure of the hydrocele always appeared to me, as was fully explained in my treatise on the subject, one of the most cruel and painful operations in the practice of surgery, merely to remove a complaint, which, though burthen some, is neither painful nor hazardous to life, and may even be prevented from being inconvenient, by occasionally having recourse to what is commonly called the palliative cure. It is true that I have not lately seen the operation of incision, as it has not been performed at St. Bartholomew's hospital during the last twenty-five years; but I



continue to hear and read such accounts of it as make me still think it my duty to contend against it, and I shall ever esteem myself particularly fortunate if I have in any degree contributed to introduce a mild method, which, like the disease it is intended to cure, produces little pain in its performance, and less hazard in its consequences.

In a subsequent part of the work alluded to, it is observed, that “ at one period a  
 “ practitioner in this country *got into notice*  
 “ by announcing frequent cures of the fistula in ano and other sinuses by injection,  
 “ but that his reputation was not of long  
 “ duration, not having been successful in  
 “ one of twenty cases which he undertook.”  
 How far injections may answer in other cases is foreign to the present subject, but with regard to their effect on the hydrocele I can assure the author, that if *my* reputation were to stand on any single basis, I should have no objection to trust it on this alone.

The

The motives which could give rise to such insinuations, I would willingly impute to the zeal which Mr. Bell feels for the method he has been accustomed to, at the same time I am much inclined to believe that he would have altered his sentiments, if he had had any experience of the method of cure by injection. If Mr. Bell had not thought proper to make the experiment himself, he needed not to go out of his own neighbourhood to learn its success. Indeed this mode of cure has met with a favourable reception from so many practitioners, that I should have been induced to pass over in silence an attempt to lessen its credit, had not this been the production of a gentleman eminent in the profession, and a voluminous writer, whose opinions may be supposed to bias the judgment of the student, and to attract the notice of those more immediately concerned. Having been thus powerfully assailed, I thought it would be almost culpably negligent not to persevere in the support of the

plan which on good grounds I had recommended, more especially as I continually see fresh reasons to be satisfied with what I have advanced. With this view I had thoughts of publishing a new collection of cases, having by me memoranda of at least forty in addition to those already described, which have succeeded under my own care, besides the histories of many which have been obligingly, and in the most flattering terms, transmitted to me, from various parts of the world, by gentlemen whom I have not even had the honour of being acquainted with. However, on consideration that, besides the original treatise, an appendix has been published in which the former arguments are strengthened with additional instances of success, and since the practice has already stood the test of inquiry and experience, I think it unnecessary to trouble the reader with more observations on the subject, than will barely be necessary to refute the objections which have been brought against it, to point out the

the



the errors which have been committed by some in their method of performing it, and to add a selection of a few particular cases, principally to exemplify and establish some circumstances *of considerable importance*. But before I conclude this preface, it will only be taking a reciprocal liberty, and not irrelevant to the subject, to make some remarks on what Mr. Bell has produced on his favourite operation by incision, and his reasons for thinking that the method by injection “ should not be adopted.”

Mr. B. in his advertisement sets out with a promise of improvements in the operation of incision, which “ he conceives to be important, and that they render the operation easy, safe, and certain.” In what respect he has improved the safety of it, I cannot clearly comprehend, for though formerly this practice was attended with excessive pain, and often accompanied with violent fever, the consequence was seldom fatal. As to the certainty of cure by incision, that also,

I conceive, cannot depend on any improvement of Mr. Bell's, for though it has sometimes failed, as I have known, in general it is allowed to be an operation of certainty; indeed it would be wonderful, if, after dividing the bag, and laying bare the testicle, sufficient inflammation were not excited to perform a cure; I only argue that it is infinitely more than is necessary to produce the proper effect. With regard to the ease which is promised in the operation, I presume it must respect the operator, not the patient; for however lightly and dexterously the knife be used, the nerves must still be sensible of its edge; the exquisitely tender coats of the testicle also must still be exposed to the irritation of handling, the contact of air, and pressure of dressings.

I shall pass over the first part of Mr. Bell's treatise, containing an anatomical account of the peritonæum and descent of the testis, which, if necessary to the knowledge of a disease that cannot happen till the testis is  
completely

completely in the scrotum, may be found in Pott and other writers on herniæ; to which subject it is perhaps more peculiarly appropriate.

In Mr. Bell's observations on the anasar-  
cous hydrocele, he properly notices, and very  
truly describes the dangerous consequences  
which often are produced by making long  
scarifications on parts loaded with water, and  
says in many instances they have caused gan-  
grene and ended fatally. It is somewhat  
singular that the same author, a few pages  
further, after having described the anasarca,  
which sometimes takes place from the burst-  
ing of a hydrocele, by which the cells of the  
scrotum are loaded with fluid, should advise  
an incision to be made through it in that  
state, and the operation for the hydrocele to  
be then performed; the passage which I shall  
beg leave to lay before the reader is as fol-  
lows;

“ The scrotal anasarca, of a local nature,  
“ has also happened from the rupture of a  
“ hydrocele



“ hydrocele of the tunica vaginalis testis :  
 “ when the hydrocele of the tunica vaginalis  
 “ arrives at a great size, jumping from a  
 “ height, or a violent blow or bruise, will  
 “ readily burst it; and the water, not find-  
 “ ing a passage outwardly, must necessarily  
 “ diffuse itself over the scrotum. Different  
 “ instances of this have been met with, two  
 “ of which are related by Douglas \*; and  
 “ different instances of it have fallen within  
 “ my own observation. A swelling of a  
 “ similar kind is also sometimes induced by  
 “ the water of a hydrocele of the tunica va-  
 “ ginalis being improperly drawn off in the  
 “ operation of tapping. When the orifice  
 “ in the skin is allowed to recede from the  
 “ opening into the vaginal coat, before the  
 “ water is all discharged, as is apt to happen  
 “ when the operation is done with a lancet,  
 “ the remainder of the collection diffuses it-  
 “ self through the cellular substance of the  
 “ scrotum, an inconvenience that may be al-

\* Treatise on the Hydrocele, by John Douglas, p. 8.

“ ways prevented, by using a trocar for this  
“ operation, instead of a lancet.

“ In whatever way the swelling is pro-  
“ duced, the cure should consist in laying the  
“ tumor sufficiently open, not only for eva-  
“ cuating the diffused serum, but for effect-  
“ ing a radical cure of the hydrocele of the  
“ tunica vaginalis.

“ Some have imagined that danger may  
“ ensue from performing the radical cure for  
“ the hydrocele in this situation; but I have  
“ done it in different instances, and no harm  
“ has ever ensued from it. The patient, in  
“ some cases, may decline the operation,  
“ and, in others, his habit of body may ren-  
“ der it improper; but, when this does not  
“ happen, few will doubt of its being bet-  
“ ter to give a patient, in such circumstances,  
“ immediate and effectual relief, by perform-  
“ ing the radical cure at once, than to sub-  
“ ject him, in the first instance, to a good  
“ deal of confinement, for removing the  
“ diffused swelling of the scrotum, and to  
“ leave

“ leave him under the same necessity as before, of submitting to the radical cure for the hydrocele of the tunica vaginalis.”

I confess that I am among those who entertain strong doubts of the propriety of operating in such a state of the complaint, for many reasons ; first, I doubt of “ a good deal of confinement” being necessary after the bursting ; I have seen the accident several times. It happened to a gentleman in the city twice, whom I afterwards cured. Another person I saw who once burst the tunica by accident, when finding no great inconvenience from the diffusion of the fluid, and that it was a considerable time before the hydrocele returned, was induced to burst it afterwards on purpose, by running against a table in hopes of getting rid of his complaint altogether, yet no ill consequences followed ; and another gentleman put himself under my care, who met with the accident in London, and was obliged to go two days afterwards into Oxfordshire, which  
he



he did without experiencing any material inconvenience. I have also several times seen the scrotum loaded with water, owing to some awkward attempts to perform the palliative cure, but in no instance that I have seen, did the extratunicated water cause much more inconvenience than while it remained within the tunica vaginalis testis, and *no* confinement was necessary; but in a short time it was absorbed, and the hydrocele again began to fill.

The next reason for my doubting of the propriety of performing the operation in the loaded state of the scrotum, may be drawn from what Mr. Bell himself has said on the danger of scarifications, that is making wounds in parts so circumstanced.

My third reason for being sceptical on this occasion, is this. If the anasarious state of the scrotum arises from the fluid which was contained in the tunica vaginalis testis, being let out, this bag must consequently be collapsed, and lie in contact with the testis.

I believe

I believe every one will allow that it would be extremely difficult, if not impracticable, to perform the incision, or any other operation, on it in such a state. But, supposing a person dexterous enough to do it, would it not, at least, be more prudent to wait till sufficient water was again collected to direct the incision, and to serve as a guard to prevent the knife from the possibility of injuring the testicle? On the whole, so far from agreeing that few will doubt of its being right "to give a patient under such " circumstances immediate and effectual relief by performing the radical cure at " once," I am inclined to think there are very few who would not be sensible that neither the loaded scrotum nor the collapsed tunic are in a fit and eligible state to admit of such an operation. This doctrine was before taught in Mr. Bell's system, to which, in my treatise on the Hydrocele, I took the liberty to object. Although I had no reason to expect that my opinion would have any

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weight

weight with Mr. Bell, yet it appears rather extraordinary, that on reflection he should still persist in his former practice, more especially, as afterwards, speaking of the operation of incision, he seems sensible of the difficulty of doing it on the collapsed tunic. His words are, " When the tumour is first  
 " opened below, the water is instantly discharged; and as this is followed by an  
 " immediate collapse of the tunica vaginalis,  
 " the direction in which it should be cut is  
 " not afterwards easily discovered." Now where can be the difference between a tunic collapsed by letting out water by an instrument, or by an accidental bursting, except indeed that by the accident the water not being able to find a passage out, diffuses itself into the cellular membrane under the skin, consequently the scrotum becomes loaded, more untractable, and more unfit to be the subject of an operation. In short, in the one case the collapsed tunic makes all the difficulty, in the other both the loaded scrotum



tum and the undistended bag forbid the operation.

Mr. Bell then gives an account of the hydrocele of the tunica vaginalis testis, and states that no internal medicine nor topical application has power to stop the progress of the complaint, which is only to be got rid of by the palliative or radical operation. Speaking of the palliative cure by means of a trocar, Mr. B. observes, that “ Indeed  
 “ the ordinary triangular form of this in-  
 “ strument makes it both difficult and un-  
 “ safe to introduce it; but the trocar, of a  
 “ flat form, an improvement which I pro-  
 “ posed a good many years ago, enters with  
 “ as much ease as a lancet. This instru-  
 “ ment is represented in plate iv. fig. 3;  
 “ and, in plates 1 and 2, other forms of  
 “ the trocar are delineated: With any of  
 “ these, an opening may be made into the  
 “ tunica vaginalis with perfect safety, and  
 “ the water with this instrument being  
 “ much more freely drawn off than by a  
 “ puncture

“ puncture with a lancet, by which effu-  
 “ sions are often produced into the cellular  
 “ substance of the scrotum; the mode of  
 “ doing it by the lancet should therefore be  
 “ laid aside.”

On this subject I must take the liberty to differ from Mr. Bell. The triangular trocar, according to my experience, is neither unsafe nor difficult to be introduced; by dilating, instead of cutting in its passage it makes nearly a simple puncture, and when the stile is withdrawn, the circular cavity of the cannula is the most capacious and best possible form for evacuating any fluid, particularly if it should chance to be thick, or ropy, which, though rarely the case in hydroceles, frequently happens in dropsies of the abdomen; and I would wish it to be observed, that the observations I am now making on the operation of tapping are equally applicable in both cases. To the flat trocar, which, if I am not mistaken, was invented by the late Mr. André, I have great objection; it cer-  
 b tainly

tainly enters with as much ease as a lancet, but it also cuts on both sides like a lancet, by which it is equally liable to open a blood vessel in the neighbourhood. I have many times been consulted in cases where the sac of the hydrocele has been filled very soon after the operation, and has become as large as before the water was evacuated, the contents of which on being let out proved to be principally blood poured out from some vessel which had been opened by the instrument in its passage, and I have traced the accident from the operation having been done by a lancet or a flat trocar. I do not say that by the passage of a triangular trocar, a blood vessel may not chance to be punctured, but it must be obvious, that a flat instrument which cuts its way on both sides must be infinitely more liable to produce such mischievous consequences. But though I conceive there is great reason to discommend the operation of tapping by the lancet or flat trocar, I cannot agree with Mr. Bell that the



lancet should be wholly "laid aside," as I think in some cases it is highly necessary and useful; for instance, if there be any doubt or uncertainty concerning the nature of the contents of the hydrocele, if we suspect it to be complicated with an enlarged and diseased testicle, or conceive that a portion of intestine may be protruded into the scrotum, or if on any other account we think it unwise to plunge in a trocar, the lancet is infinitely the safest and best instrument to make use of, since by that the smallest superficial puncture may be made through the bag so as to determine its contents without any risque or hazard, and if it prove to be fluid, the small opening may be followed by the introduction of a trocar, through the cannula of which the remainder of the water may easily be evacuated. On the whole therefore I would recommend that the flat trocar, but not the lancet, be "wholly laid aside."

Again Mr. Bell observes: "If a common  
"round trocar is used, a small opening

“ about a quarter of an inch in length  
 “ should be made through the skin with  
 “ the shoulder of a lancet on that point  
 “ where the trocar is to enter.” To this  
 also, whether the trocar be used in the abdomen or in the scrotum, I cannot help offering an objection, as such division of the skin prolongs the operation, gives additional pain, and is wholly unnecessary. Not long since I was sent for to perform the operation of the paracenthesis on a lady at a distance from the metropolis, which was accomplished without any difficulty by the common round trocar, and a large quantity of water was evacuated; some time afterwards it collected again, and the operation again became necessary. As the nature of the case, which at first was obscure, had been completely ascertained, it was thought more convenient to employ a gentleman in the neighbourhood, who following Mr. Bell’s instructions, began first by making an incision through the integuments with a  
 lancet,

lancet, and then passed in a trocar. This process so prolonged and increased the pain of the operation, that the patient would never suffer it to be repeated, but when it became necessary to draw off the water again, as it did several times afterwards, she always either sent for me, or came to London for this purpose. I have thought it worth while to mention this circumstance, because a simple fact sometimes outweighs much reasoning.

Mr. Bell then gives an account of the different operations employed by the ancient practitioners for the cure of hydroceles. Speaking of the views of modern operators, Mr. Bell observes, “ Parts of the human  
 “ body, in a state of inflammation, very  
 “ readily adhere to each other. Indeed, so  
 “ easily do they do so, that some art is re-  
 “ quired to prevent the adhesion of con-  
 “ tiguous inflamed parts, of which every  
 “ practitioner must have met with examples.  
 “ Hence abscesses and encysted tumours



“ are more easily cured by exciting inflam-  
 “ mation over their internal surfaces, after  
 “ their contents are evacuated, than by any  
 “ other means ; and, in like manner, it is  
 “ now known, that the hydrocele of the  
 “ tunica vaginalis may be treated upon the  
 “ same principles, and with the same general  
 “ effects.” And again, “ The intention,  
 “ then, of every means now in use, for the  
 “ radical cure of this species of hydrocele,  
 “ is, to induce such a degree of inflamma-  
 “ tion on the parts in which it is seated, as  
 “ may tend to obliterate entirely the cavity  
 “ of the tunica vaginalis, by making it ad-  
 “ here firmly to the tunica albuginea the  
 “ surface of the testicle.” Is it not rather  
 extraordinary that this writer should not be  
 contented with such gentle means as are  
 proved to answer his apparent intention, but  
 should think it necessary to lay open the  
 whole tumour to produce the effect? And  
 also (as will be shewn when we come to  
 consider his directions in the operation of  
 incision)

incision) should pass a piece of linen dipped in a greasy composition between the coats and testicle? Surely at least there is great appearance of inconsistency in first agreeing that the cure is to be effected by union of parts, and then to lay them open and pass in a dressing, to prevent them from uniting, for though after suppuration, an union may take place, the union by the first intention, which is the rational plan, must certainly be prevented by such treatment.

Mr. Bell observes, “ when the sac has  
 “ become unusually thick, or hard, it proves  
 “ sometimes useful to remove those parts of  
 “ it that are most particularly diseased; and  
 “ when it has been distended to such a de-  
 “ gree as entirely to have lost its tone, re-  
 “ moving a part of it may forward the  
 “ cure.” In answer to this I cannot help re-  
 marking that I have succeeded by means of  
 injection in several cases of this de-  
 scription, which will be found at the con-  
 clusion of this work; but that to which

I would particularly refer, is No. 1, as it was the first in which I tried the injection, and where the coats of the testis were so large and thick, resembling buff leather, that neither had I nor any person present an idea that adhesion would take place, and in which I have not the smallest doubt, if incision had been employed, that it would have been judged necessary, *on inspection*, to cut away the coat, and probably remove the testicle, which was proportionally enlarged. The diseased appearances in this case, I am confident, from the experience I have since had, and the observations I have since made, (though they much resembled a scirrhus affection of the parts) arose from long continued distention. The complete success I had in this extraordinary case first stamped a value on the method which I recommend, and which so many subsequent trials have confirmed.

After describing the operation by the caustic and the seton, Mr. Bell proceeds to  
his



his favourite operation by incision, which I have perused with great attention, but am wholly at a loss to discover the ease which is promised in the preface. It appears to be conducted much in the old way, and likely to produce similar sensations, but I shall beg leave to let the author speak for himself:

“ The patient being laid upon a table of  
 “ convenient height, and properly secured  
 “ by assistants, with the scrotum lying nearly  
 “ on the edge of the table, the operator,  
 “ with one hand, should grasp the tumor  
 “ behind, so as to hold it firm, and make it  
 “ somewhat tense on the anterior part of it:  
 “ With a common round-edged scalpel in  
 “ the other, he should now divide the ex-  
 “ ternal teguments by one continued inci-  
 “ sion from the upper end of the tumor, all  
 “ along its anterior surface, down to the  
 “ most depending point of it.

“ If the incision has been properly made,  
 “ the divided scrotum will retract, and the  
 “ tunica vaginalis will be laid bare, for the  
 “ breadth

“ breadth of about half an inch, from one  
 “ end to the other. An opening is now to  
 “ be made in the vaginal coat, with a sharp  
 “ pointed bistoury, just at the upper end of  
 “ the tumor, where the first incision com-  
 “ menced. This opening should be of such  
 “ a size, as freely to receive the finger of the  
 “ operator; which, being inserted, the bis-  
 “ toury is to be conducted upon it, and the  
 “ sac divided to the very bottom, directly in  
 “ the course of the first incision. By the  
 “ previous division of the skin, with the  
 “ scalpel, instead of the bistoury, the ope-  
 “ ration is done with more accuracy, and  
 “ less pain; for the scalpel, from its con-  
 “ vexity, admits of a finer edge than an in-  
 “ strument of any other form is capable of  
 “ receiving, and hence it cuts with more  
 “ ease.

“ By making the incision of the teguments  
 “ and tunica vaginalis together, as in some  
 “ instances I have seen done, the operation  
 “ may be somewhat shortened; but the time  
 “ gained

“ gained by it is not more than two or  
“ three seconds, while the incision is apt to  
“ be ragged and unequal: for when done  
“ in this manner, particularly when the open-  
“ ing is made at the under extremity of the  
“ tumor, as some have advised, the parts  
“ cannot be kept sufficiently tense during the  
“ time of making it.

“ I have desired that the first opening in  
“ the vaginal coat may be so large, as easily  
“ to receive the finger of the operator,  
“ which ought to be pushed in behind the  
“ bistoury, without withdrawing the instru-  
“ ment, as is commonly done. In this  
“ manner, we shorten the operation, and,  
“ by giving a free vent to the fluid contain-  
“ ed in the sac, we prevent it from spread-  
“ ing and forming vesications in the cellular  
“ substance of the vaginal coat, and conti-  
“ guous parts, as it is apt to do when the  
“ opening in the sac is too small. By mak-  
“ ing the first opening in the upper end of  
“ the sac, much trouble and inconvenience is  
“ prevented,



“ prevented, which always occur from mak-  
 “ ing it below. For as I have before re-  
 “ marked, *when the tumor is first opened*  
 “ *below, the water is instantly discharged;*  
 “ *and, as this is followed by an immediate*  
 “ *collapse of the tunica vaginalis, the direction*  
 “ *in which it should be cut is not afterwards*  
 “ *easily discovered:* whereas, by making the  
 “ first opening above, as the water is there-  
 “ by gradually emptied as the opening is  
 “ carried downwards, the vaginal coat con-  
 “ tinues distended at the bottom, till the  
 “ operation is finished.

“ With a view to save some pain to the  
 “ patient, the late Mr. Hunter advised the  
 “ incision both of the scrotum and tunica  
 “ vaginalis, to be only two-thirds of the  
 “ length of the tumor; and others have  
 “ thought even that one half of this is suf-  
 “ ficient. But the difference of pain be-  
 “ tween incisions of these different lengths  
 “ is inconsiderable, and not to be regarded  
 “ when compared with the effects which re-  
 “ sult

“ fult from them. When the incision is  
“ carried the full length of the tumor, the  
“ operation will succeed, perhaps, in every  
“ instance, if the subsequent part of the  
“ treatment meets with due attention; where-  
“ as, I have known various instances of these  
“ partial openings being followed with a re-  
“ turn of the disease.

“ It is particularly proper to carry the in-  
“ cision of the tunica vaginalis down to  
“ the most depending point of the tumor;  
“ otherwise, in the first instance, the con-  
“ tents of the sac will not be completely dis-  
“ charged, while room will be given for col-  
“ lections of matter during the cure. It is  
“ also proper to remark, that, in making  
“ this incision of the sac, it ought to termi-  
“ nate at some distance from the testis; for  
“ I have, in different instances, observed,  
“ where the vaginal coat has been divided  
“ near to the testicle, that the inflammation  
“ was particularly severe. The incision  
“ being completed, the testicle, covered with  
“ its

“ its tunica albugina, is brought fully in  
“ view. In some instances, the testis pro-  
“ trudes from the surrounding parts; in  
“ which case, it should be immediately re-  
“ placed, and covered as quickly as possible  
“ from the air; and if no part of the tunica  
“ vaginalis is to be removed, the dressing  
“ may be finished directly on the sac being  
“ opened.

“ Unless the sac is diseased, or so much  
“ distended as entirely to have lost its tone,  
“ no part of it, as I have observed above,  
“ should be removed: but when hardened to  
“ the firmness of cartilage, as I have more  
“ than once seen, as, in this state, it is apt to  
“ excite pain when applied to the tender  
“ surface of the testis, it ought to be remov-  
“ ed; and as, in this state, it commonly  
“ separates with ease from the surrounding  
“ cellular substance, it is easily and quickly  
“ cut away with a scalpel or bistoury.”

Thus far I think we have arrived at no-  
thing new or pleasant; but he proceeds,  
“ Hitherto



“ Hitherto we have been supposing that the  
“ disease is confined to one side of the scro-  
“ tum ; but, in some instances, as I have re-  
“ marked above, we meet with a hydrocele in  
“ both sides at once. In this case, the com-  
“ mon practice is, to do the operation twice  
“ in all its parts, both in the scrotum and  
“ tunica vaginalis, by laying each collection  
“ open, from top to bottom, by double inci-  
“ sion. Some advise both operations to be  
“ done at the same time ; but in general,  
“ practitioners are afraid of too much in-  
“ flammation being induced by this ; so that  
“ one side is commonly allowed to heal be-  
“ fore the other is opened. In this manner,  
“ the patient is exposed to delay, uncer-  
“ tainty, and to the confinement the conse-  
“ quence of two operations.

“ This, however, is not necessary, as the  
“ operation may be done on both sides at once,  
“ with little more pain, and so far as I have  
“ seen, with no more hazard, than in the  
“ usual method of doing them separately.

“ The

“ The method in which I have done it is  
 “ this:

“ After finishing the operation on one  
 “ side, an opening is made into the vaginal  
 “ coat of the opposite testicle, at the upper  
 “ extremity, through the septum scroti ; and  
 “ the incision being carried down to the bot-  
 “ tom of the tumor, the cyst is thus equally  
 “ well laid open, the water is completely  
 “ evacuated, and the disease is not more  
 “ liable to return, than by doing the opera-  
 “ tion, in the usual manner, and at different  
 “ times.” There is indeed something very  
 ingenious and novel in performing both ope-  
 rations at once by dividing the septum scroti ;  
 I must confess I never heard of it before,  
 but should rather conceive that there would  
 be some difficulty in stuffing the dressings,  
 which we shall find are afterwards recom-  
 mended through the division of the septum,  
 and I should imagine it would greatly retard  
 the healing of the other side ; so that I can-  
 not but suspect that the patient would be

*most*

*most severely* “ exposed to delay, uncertainty,  
 “ and to the confinement the consequence  
 “ of two operations.” However it is a mode  
 of practice which I believe will not be *often*  
 imitated.

Mr. Bell then goes on to shew how the  
 wound should be dressed. “ Whether the  
 “ hydrocele is double, or confined to one  
 “ side, as soon as the incision is finished, if  
 “ the testis is found, the wound should be  
 “ quickly dressed; and, I think it right to  
 “ observe, that, on the manner in which this  
 “ is done, much of the success of the opera-  
 “ tion at all times depends, more indeed than  
 “ is commonly imagined.

“ If the vaginal coat is merely wrapped  
 “ about the testicle, without the interpofi-  
 “ tion of dressings, or if the divided sides of  
 “ it are immediately united with futures, as  
 “ some have advised, partial adhesions are  
 “ apt to take place, before a degree of in-  
 “ flammation is produced over the whole,  
 “ sufficient for rendering the cure complete.



“ In this manner, cavities are left, which  
 “ either fill with pus during the cure, and  
 “ require to be laid open, or they afterwards  
 “ give rise to collections of water, and thus  
 “ occasion a return of the disease, different  
 “ instances of which have fallen within my  
 “ observation. And again, the practice of  
 “ stuffing the cavity of the sore with dress-  
 “ ings, is also a frequent cause of mischief.  
 “ By rubbing, or pressing upon the surface of  
 “ the testis, such a degree of inflammation is  
 “ sometimes induced, as excites much pain,  
 “ inflammation, and fever. But this is al-  
 “ most always the fault of the operator; for,  
 “ in a great proportion of cases, if the dress-  
 “ ings are properly managed, no symptoms  
 “ of violence ever occur.

“ After having tried various ways of dress-  
 “ ing the parts, the method I have now long  
 “ pursued, and which, in no instance I have  
 “ found to fail, is this: The testicle being  
 “ properly placed in the newly divided sac,  
 “ two pieces of soft old linen, exactly the  
 “ length

“ length of the cut, previously dipped in a  
 “ liniment of wax and oil, are by the help  
 “ of a probe, inserted to the bottom of the  
 “ sac, one on each side of the testicle, be-  
 “ tween it and the vaginal coat, care being  
 “ taken to leave a sufficient quantity of each  
 “ pledgit hanging out of the wound, to ad-  
 “ mit of its being easily withdrawn at the  
 “ first or second dressing; otherwise, if the  
 “ swelling, which afterwards takes place,  
 “ shall be considerable, they may, for some  
 “ days, be entirely covered, and even at last  
 “ removed with difficulty, as I have seen in  
 “ different instances where this piece of at-  
 “ tention has been omitted.

“ If the testicle has pushed forward, and  
 “ is with difficulty retained in its situation,  
 “ as it will be *apt to slip out* between the  
 “ lips of the wound between one dressing  
 “ and another, no means should be omitted  
 “ that can, with safety, be employed for  
 “ preventing it, as it cannot afterwards be  
 “ so easily replaced; and, from want of at-

“ tention to this, I have known the testicle  
“ *entirely extruded* from the scrotum, and,  
“ in one instance, from sufficient pains not  
“ being taken to replace it, the cure was  
“ completed with the *testis in this situation*;  
“ when, instead of being covered with the  
“ vaginal coat and scrotum, it was covered  
“ with *scarf skin only*.

“ The best method of preventing such a  
“ misfortune, is, to draw the edges of the  
“ divided tunica vaginalis and scrotum near-  
“ ly together, after the testis has been pro-  
“ perly placed, and the pledgits of oiled li-  
“ nen inserted; and, in this situation, to se-  
“ cure them, either with a couple of futures,  
“ at proper distances from each other, or  
“ with slips of plaster, sufficiently adhesive  
“ for retaining them.

“ This being done, the whole scrotum is  
“ covered with a large pledgit of saturnine  
“ cerate, or common wax ointment, by  
“ which the parts are kept much more soft  
“ and easy, than when covered, in the usual  
“ way,



“ way, with dry lint, at the same time that  
“ the dressings are much more easily re-  
“ moved. A cushion of soft tow, with a  
“ proper compress, is placed over the pled-  
“ git of ointment, and the whole are retained  
“ by the T bandage, or common suspensory  
“ bag. The patient is now carried to bed:  
“ a quieting draught should be given; and  
“ he should be enjoined to remain as much  
“ as possible in the same posture; for much  
“ motion at this period certainly does mis-  
“ chief.

“ The intention of this operation being to  
“ induce a *moderate degree* of inflammation  
“ in the tunica vaginalis and surface of the  
“ testicle, if the pain, inflammation, and  
“ swelling, which, in some degree, always  
“ succeed, do not run to a great height, no-  
“ thing is to be done for the first two or  
“ three days after the operation; but, when  
“ these symptoms become violent, and espe-  
“ cially when much fever is induced, means  
“ must be employed to lessen or remove them.”

In several parts of Mr. Bell's tract, as I have shewn, he appears thoroughly sensible that the adhesive inflammation is all that is required or is necessary : yet we find, after all this painful process of getting at the testis, and the inflammation which must be brought on by handling and exposing it to the air, he thinks the adhesive inflammation is not to be trusted, but fears it may only take place in parts, and leave hollows which may reproduce the disease. On this account he thinks it necessary to insert a foreign body between the coat and the testis. Surely by this all idea of adhesive inflammation is given up, and suppuration must be the consequence.

Mr. Bell proceeds in his account, p. 106,  
 “ In most cases, the inflammation of the tes-  
 “ ticle does not rise higher than it does in  
 “ the simple hernia humoralis from gonor-  
 “ rhœa ; and it gradually subsides as the sup-  
 “ puration advances. The abatement of the  
 “ inflammation is also assisted by continuing  
 “ a cool

“ a cool diet, the occasional use of opiates,  
“ and keeping the belly open.

“ Often in two days, and always by the  
“ end of the third, I remove all the dress-  
“ ings, except the pledgits inserted between  
“ the testis and tunica vaginalis. This is  
“ one important advantage we derive from  
“ covering large sores with pledgits of oint-  
“ ment. The dressings are easily removed  
“ at any period ; so that, without waiting  
“ for a plentiful suppuration, as is com-  
“ monly done, the patient may, at any time,  
“ be relieved from that distressful uneasiness,  
“ of which all those complain, in whom the  
“ first dressings are several days in being  
“ taken away. They are always rendered  
“ stiff and uncomfortable by the blood dis-  
“ charged upon them after the operation ;  
“ and the matter at first secreted being thin  
“ and acrid, I have, in various instances,  
“ seen, when the dressings have not been re-  
“ moved for six or seven days, and in some  
“ cases even in less, that the whole contigu-



" ous parts have been escoriated by the acri-  
 " mony of the matter alone, and by which  
 " more uneasiness has been induced during  
 " the course of the cure, than by any cir-  
 " cumstance connected with the operation :  
 " Nay, in some, the inflammation induced  
 " in this manner has an obvious influence  
 " on that of the testicle, and tends to render  
 " it much more severe than it otherwise  
 " would be.

" On some occasions, at the first dressing,  
 " and always at the second or third, the  
 " pledgits inserted between the tunica vagi-  
 " nalis and testicle come away ; and, when-  
 " ever this happens, they should be renewed.  
 " It is also proper to renew them daily, *for*  
 " *the first fourteen or fifteen days after the*  
 " *operation* ; not, however, of the same  
 " depth as the first, as, during the latter part  
 " of the cure, it proves sufficient, if they are  
 " merely inserted so far as to prevent the di-  
 " vided edges of the tunica vaginalis from  
 " adhering to the testicle before the adhesive  
 " process

“ process has taken place in the parts more  
“ deeply seated. To this point, I must ob-  
“ serve, the most particular attention is ne-  
“ cessary; for, when this mode of operating  
“ fails, that is, when the disease returns, it  
“ is, almost in every instance, from this pre-  
“ caution being overlooked.”

In this place perhaps it would be not im-  
proper to make some apology for introducing  
such long quotations. I can only say, they  
appeared to me necessary for the exposition  
of certain facts; and if quotations are made,  
they should be made fully and fairly. The  
passages which have been transcribed need  
no comment, they sufficiently point out the  
tediousness, the pain, the hazard and diffi-  
culty which attend on every part of this mode  
of cure.

After more directions and observations on  
the manner in which he conceives the cure  
is performed, Mr. Bell concludes with say-  
ing, “ In some the cure is complete in three  
“ weeks, I have known it in less, while in  
“ others

“ others it runs on to the fourth, fifth, and  
 “ in a few cases to the sixth week.” Mr. Bell  
 might have extended his latitude to six months,  
 which I have known employed in completing  
 this method of cure, under two surgeons of  
 established character in this country; but  
 take it as it is described with all its circum-  
 stances, and let any one contrast it with the  
 simple operation of throwing in an injection,  
 which produces sometimes only a slight pain  
 and irritation during a few minutes, and fre-  
 quently never gives any trouble afterwards;  
 and though the pain is sometimes rather  
 more considerable, it is always of short dura-  
 tion. The day after the operation, in gene-  
 ral, the patient may get up, change his room,  
 and often in ten days or a fortnight, be free  
 from all confinement. In short, let any  
 practitioner read the account of the incision  
 as given by one of its most sanguine admirers,  
 and the cases which are subjoined of the cure  
 by injection, which, confirmed by the practice  
 of others, prove, that it is at least equal in  
 certainty



certainty of producing a cure to the operation of incision, or any other which has been recommended, and then let him determine which deserves the preference.

Here I would willingly conclude, and trust the decision to what has been said, but really Mr. Bell in the latter part of his book has introduced such assertions on the cure by injection, that it becomes absolutely necessary to take notice of them; I hope therefore not to be charged with unnecessary prolixity, if I make some further comments.

After some observations on the comparative advantages of the caustic, seton, and simple incision. Mr. Bell says, “ I have seen all  
“ the three produce troublesome symptoms,  
“ such as tension of the abdomen, inflammation, and fever. But from much observation, I can without hesitation say that  
“ the seton is more frequently productive of  
“ these than either of the others.”

Having adopted a better method, I do not stand up for the excellence of the seton. It  
certainly

certainly produces more inflammation than is necessary, but I do not think it liable to all the objections which Mr. Bell has brought against it, particularly that it does not allow of the examination of the testicle. I insist that when the water is let out the testicle may be accurately examined, as well, and in my opinion much better, by the touch, than by the sight. I should be glad to be informed what appearance *on inspection* of the tunica albuginea, for that is all that can be seen, denotes the existence of scirrhusity or disease, which cannot be ascertained by the tactus eruditus of an experienced surgeon.

Mr. Bell observes, p. 119, “ I have been  
 “ concerned in different cases, where the  
 “ most experienced surgeons were at a loss  
 “ to determine the real nature of the disease;  
 “ that is, whether the swelling in the scro-  
 “ tum was a simple hydrocele of the vaginal  
 “ coat, or an effusion into that bag produced  
 “ by a real sarcocoele. In all such cases of  
 “ doubt, the surgeon should proceed as if  
 “ the

“ the tumor was a real farcocele. If, on  
 “ laying open the swelling, the testicle is  
 “ found diseased, that is, if it is in such a  
 “ state to require extirpation, it should be  
 “ removed immediately.” I am sorry to ad-  
 vance any thing which appears so directly  
 opposite to Mr. Bell’s directions, yet cannot  
 help giving it as my decided opinion, that, in  
 all such cases of doubt, the surgeon should  
 not proceed as if the tumor was a real farco-  
 cele, but should use such methods as often  
 remove a hardness which appears to be schir-  
 rous. It is time enough to think of laying  
 open and extirpating when every method  
 has been tried to soften, and lessen the com-  
 plaint, and has failed. I have succeeded in  
 reducing many enlarged testes which have  
 been in a most critically doubtful state;  
 which, if they had been exposed to exami-  
 nation by the view, I have not the smallest  
 doubt it would have been thought necessary  
 to extirpate. It is further observed by Mr.  
 Bell, that “ In several instances of this kind,



“ where, by different practitioners, a mere  
 “ collection of water was expected without  
 “ any other affection, the testicle has been  
 “ found to be so much diseased, as to render  
 “ immediate extirpation proper. Now, if  
 “ in such circumstances a cure had been at-  
 “ tempted by the seton, the testicle would  
 “ have been allowed to remain exposed to  
 “ the irritation produced by the cord, which  
 “ probably would have induced very trou-  
 “ blefome and even alarming symptoms; for  
 “ we know that every symptom of a scir-  
 “ rhous tumor, is uniformly rendered worse  
 “ by irritation.”

In several instances also where hydroceles  
 have been complicated with an enlargement  
 and hardness of the testis which have had  
 the appearance of scirrhusity and have been  
 deemed scirrhus, I have made use of injec-  
 tion, and have cured the hydroceles without  
 producing any alarming or even troublefome  
 symptoms, and afterwards the testicle has  
 become softer and nearly of its natural size.

In

In these cases I confess I would not have ventured to use the seton, incision, or any other remedy for the cure of the hydrocele, having no doubt but that the great degree of inflammation produced by contact or exposure would have aggravated the disease, and probably brought on irreparable mischief; but the ease with which the injection operates emboldened me to try it; and now from repeated observation I can positively assert that the *apparent scirrhus* which often accompanies hydroceles of long standing, is often nothing more than a thickness of the coats of the testicle from long distention, and an enlargement of the gland itself from pressure, which being removed, the parts become thinner, softer, and gradually assume nearly their natural state. This was the fact, which I deemed important, and which I presume will be proved and elucidated by some instances inserted among the subjoined cases.

Mr. Bell remarks, that " It sometimes  
 " happens, as will be more particularly no-  
 " ticed

“ ticed in the next section, that a portion  
 “ of gut is contained in the upper part of a  
 “ hydrocele. Of this I have met with *several*  
 “ *cases*, in some of which, *no suspicion* was  
 “ entertained of it, till the sac was laid open,  
 “ although in two of them the water had  
 “ previously been drawn off with a trocar.”

I am really surprised at the foregoing assertion, conceiving that any judge of the complaint could readily distinguish by the feel if any thing were protruded from the abdomen; of which, if there be room for the smallest suspicion, a lancet, as I before observed, will be the best instrument to be used, and a superficial scratch may be made to determine the nature of the contents, which, if it prove fluid, may be safely evacuated by passing a probe through the opening, or rather a slender flat cannula, one of which I have caused to be made for this purpose of a conical form, and terminating sufficiently fine to pass through a small aperture; when the bag is thus emptied and in a flaccid state, such a  
 circumstance



circumstance as a portion of intestine coming down by the side of the spermatic process, must I should conceive be obvious to every one, in any degree acquainted with the natural state of these parts.

The last objection which Mr. Bell makes to the seton is this, “ In other instances, “ the water of a hydrocele is contained in “ hydatids\*; a circumstance which cannot “ be discovered previous to the opening of “ the tumor: and as it will be readily admitted, that the method of cure by seton, “ is ill suited for discharging hydatids, this “ of itself is a material objection to the “ practice. So that, although the seton, in “ every other respect, should be equally eligible with the simple incision, which, for “ the reasons formerly given, I think it is “ not, yet the three last objections I have

\* “ Those who doubt of the existence of hydatids in “ cases of hydrocele, as some have done, will find different “ instances of them recorded in Morgagni de causis et sedibus Morborum.”

“ adduced against it, seem to be sufficient  
 “ reasons for setting it aside.”

No one will question the authority of so respectable an author as Morgani, but he is a recorder of curious and extraordinary facts; Had the complaint been frequent, it must probably have come under Mr. Bell's immediate notice, and if such cases had occurred in his practice it is to be presumed that he would have produced them on his own authority. In upwards of thirty years experience, I do not recollect to have seen one case of the kind. From all which it is clear that the existence of hydatids in a hydrocele is so very uncommon, that the objection which is made to the seton on this account appears to me not “ material,” but frivolous.

Mr. Bell then considers the cure by caustic, of which he speaks favourably, but still greatly prefers the incision, on the subject of which he again dilates. “ I may farther mention  
 “ one important advantage of this operation  
 “ in addition to what I have said of it, that

“ it may be considered as an absolute security against a return of the disease.” Notwithstanding this position I feel myself obliged to say that, according to my experience, the operation of incision is not always successful; two instances of its failure will be related (Cases XIX and LIV) both of which were afterwards cured by injection.

As another argument in favour of incision, Mr. Bell observes, that “ for these last twenty years scarcely any cure has been attempted through the greatest part or perhaps the whole of Scotland but by incision.” I cannot perceive what this is calculated to shew, except it be the source whence Mr. Bell’s deep-rooted prejudice in its favour is derived. After bestowing many encomiums on the operation of incision, Mr. Bell concludes with, “ For my own part I now consider it as a matter of nearly the same simplicity as the treatment of a common abscess in any part of the body.” This observation proves to



what degree a man may be biaſſed in favour of that which has once taken poſſeſſion of his mind, and yet, that it ſhould ſo quickly follow the deſcription of the operation, and its conſequences, is rather aſtoniſhing.

I muſt preſume that the patients would be ſenſible of a very material difference between the expoſition of the tender coats of the teſticle, in the manner which has been related, and “ the treatment of a common abſceſs.” However I ſincerely congratulate my countrymen in North Britain, that the candour and good ſenſe of ſeveral practitioners in Edinburgh have led them to break through a prejudice and cuſtom confirmed by twenty years practice, by making trial of what was propoſed as an eaſier cure; and I have received much pleaſure from being informed that it has answered to their ſatisfaction \*.

After

\* The obſervation of Dr. Duncan, in his preface to the laſt volume of his Medical Commentaries, is ſo ſtrong a confirmation of what I have aſſerted concerning injections, and comes from ſuch reſpectable authority, that I ſhould

After touching lightly on Mr. Else's method of cure by the small caustic, Mr. Bell proceeds to give his animadversions on the cure by injection, and having stated that it was formerly practised, produces reasons why it came into disuse. " The injection either  
 " excited severe pain, on being first thrown  
 " in, and was succeeded by violent inflammation, and this, in some, by distressful  
 " collections of matter; or the cure did not  
 " prove permanent. In a few cases, the disease returned almost immediately, that is,  
 " in the course of two or three weeks; but

be wanting to myself not to insert the passage. " But besides hypotheses still requiring further confirmation, the  
 " reader will find in the present volume many important  
 " practices recommended on the solid basis of extensive  
 " experience, which have not perhaps been hitherto  
 " adopted so generally as they deserve; these it is unnecessary, and would perhaps be improper to particularize.  
 " We must, however, be permitted to say, that, in our  
 " opinion, the mode of operating in the hydrocele which  
 " has proved so successful in the hands of Mr. Earle, cannot be too soon adopted by every practitioner who is  
 " anxious to consult the ease and safety of his patient."

“ this was not frequent. For the most  
 “ part, the cure appeared to be complete,  
 “ and continued to be so, till at some distant  
 “ period, to the great disappointment both  
 “ of the patient and surgeon, a recurrence  
 “ of the swelling was observed. In some,  
 “ this happened in five or six months; in  
 “ others, not till three or four years had  
 “ elapsed.” Violent symptoms are certainly  
 likely to be caused by violent remedies; but  
 this cannot by any means apply to the in-  
 jection recommended in my treatise, which is  
 so diluted as to produce a gentle irritation,  
 and nothing more. No violent inflamma-  
 tion, no distressful collections of matter ever  
 take place after the use of it; of these truths  
 abundant proofs may be collected from the  
 cases which I have produced, and from the  
 practice of others.

With regard to the return of the hydro-  
 cele, it is allowed that if not cured it cer-  
 tainly will return; but Mr. Bell must know  
 that the return is evident in *a very short time*,

as



as is always the case after the palliative cure. But if any one ignorant of the nature of the disease should object to this, and say duration of time is necessary for the confirmation of the cure, I answer that cases of this private nature can very seldom be brought forward, but that proofs of cure are as readily to be produced after the injection as after any other operation for the same purpose; and if it were necessary, I could quote some of those on whom I first practised this method. Particularly I am at liberty to mention the gentleman alluded to in Case No. 2, on whom it was performed in 1787, whom I have frequently the pleasure of seeing; and instances of *many* others I could produce of an early date, who continue perfectly well. Mr. Bell's observation, that " In hospital practice patients are seldom heard of after being dismissed," I cannot help thinking erroneous and nugatory, because if they were not cured they certainly would apply again, as they continually do after the palliative cure.

Of

Of all those on whom I have performed the radical cure by injection *none* have returned with a reaccumulation of water on the same side, though some have applied with a new hydrocele on the other side, and many for other complaints, by which means I have had frequent opportunities of examining the seat of their former disease. But these instances of duration are wholly unnecessary, because every one knows, who knows any thing of the subject, that if the cure of a hydrocele is incomplete, the water begins to collect immediately. I am well grounded in asserting that, in general, if it does not shew itself in three weeks, or sooner, provided the distention arising from the operation has subsided, there remains no doubt of the cure being complete. Nothing can be more simple than the explanation of this fact; either the cavity which held the fluid is closed by the operation, or it is not; if the means employed to produce the adhesive inflammation have been partial, or insufficient for the pur-

pose, and consequently a cavity still remains, there is nothing to prevent a reaccumulation of fluid; but this must happen immediately, or not at all, because, if the adhesions have taken place, and are sufficient to prevent the return of the fluid in the first instance, the additional strength and firmness, which they are continually acquiring, must prove an effectual barrier against any future collection.

Mr. Bell's assertion therefore, page 153,  
 " that although in many a complete cure is  
 " obtained (by injection), the disease returns  
 " early, that is in the space of a few weeks  
 " in a ninth or tenth part of all on whom  
 " the operation is performed, and in five of  
 " eight or nine at some uncertain period in  
 " future," I must take the liberty positively  
 to contradict; and however harsh my comment on this passage may appear, truth obliges me to affirm that it is contrary to the nature of the disease, diametrically opposite to what can be proved, and, so far as I am  
 authorised



authorised by my own practice to assert, absolutely without foundation.

Mr. Bell then gives an account of the method of injecting nearly as described in my treatise, but I must observe that in my opinion he has made an alteration greatly to the disadvantage of the operation by introducing a flat trocar instead of the round one which I have recommended. The flat trocars, I mean those which have the split cannula, are particularly improper in these cases, as their filets, or cutting points, being rather larger than their cannulæ, the opening they make will not confine the injection, but suffers it to trickle down by the sides of the cannulæ; but, without exception, I think all flat trocars are bad for this purpose, as a division being made by the cutting sides of the filets to make way for their cannulæ, when they are withdrawn the cannulæ are unconfined, and liable to constant motion; whereas the round cannula which follows a simple puncture, being firmly embraced by the opening in the scrotum

turn and tunica vaginalis, maintains its situation properly and steadily, and suffers none of the injection to escape. I have more than once, as will be noticed, (Cases XLVIII, XLIX, and L) known the operation not succeed from the use of the flat trocar, and think it must be very liable to fail from that cause.

Mr. Bell also, though he so much disapproves of the operation, has given an elegant plate of the elastic bag and stop-cock as recommended in my treatise. Plates are ornamental to a work, otherwise so simple a machine perhaps might have been described by words; but I must take this opportunity of observing, that I have long since discontinued the use of the stop-cock, as, not being well able to spare a hand during the operation, to turn it, I found it awkward and embarrassing. A pipe, one end of which is made to fit into the cannula of a trocar, the other adapted to receive the neck of an elastic bottle, with a valve or ball in the center of the pipe to permit the entrance and  
prevent

prevent the exit of the injection, will be found infinitely more convenient and useful.

Perhaps if Mr. Bell had bestowed a little more consideration on the subject, or had made any trial of the instrument, which he has thought proper to delineate, he would have discovered the inconvenience of it, as I have done; but thus it frequently happens that practical defects are handed down, and placed out of the reach of their original authors, to rectify or amend; for there is an error to which compilers of systems are too often liable, that while eagerly engaged in collecting and appropriating the thoughts of others, they sometimes forget to think for themselves.



A  
T R E A T I S E  
O N T H E  
H Y D R O C E L E.

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**I**N my edition of the works of the late Mr. Pott was inserted an account of a method of curing the Hydrocele, which appeared to me preferable to any which I had known practised in this country; but it having been suggested that the success of the operation was scarcely sufficiently established by the cases which were there exhibited, and the subject being of importance to a considerable part of mankind, I have been induced to resume it, and to relate what further observations on it have occurred.

B

My

My former tract, being joined to Mr. Pott's comprehensive account of every species of Hydrocele, rendered superfluous any other introduction; but this, not having the same advantage, requires some previous description of the disease itself; though it may not be necessary to enter very deeply into what has been repeatedly discussed by more able writers, and is now pretty generally understood.

The researches after a safe, easy, and effectual cure for the Hydrocele have exercised the ingenuity of many practitioners, and a variety of methods have been adopted; these, I presume, it will not be unuseful to collect and bring into one point of view, to give some account of the rise and progress of each, and to examine their respective merits and defects.

THE term Hydrocele is usually applied by surgeons to that species of swelling in the scrotum which is formed by an accumulation  
of

of a watry fluid; it is a disease to which all descriptions and conditions of men are subject, from the earliest infancy to the latest age, and to which the healthy, the infirm, the weak, the robust, the voluptuous, and the abstemious, appear to be equally liable. The original cause, in some instances, may be traced, but generally is not to be discovered. A blow, or a contusion, has been often known to produce it; sometimes it is subsequent to a hernia humoralis: the most common cause perhaps is relaxation, as appears from the frequency of it in warm climates.

There are varieties, in the situation and appearances of this disease, which have been noticed by several writers. I mean to confine my observations to that kind which is most common, and is formed between the coats which envelop the testicle; these are well known to be two only, the tunica albuginea, which is the immediate and proper



covering of its vascular structure, and the tunica vaginalis, which is a continuation of the same membrane, but being reflected forwards, loosely invests the testis and the greater part of its epididymis, without any connection except in the hinder part\*. On the surface of these, as on every membrane which lines the various cavities in animal bodies, there is a constant secretion of a fluid which prevents any cohesion, and permits the easy motion of contiguous parts: this fluid is usually kept from increasing beyond what is necessary for the above purposes, by vessels destined to absorb the redundancy. If either of these offices be not duly performed, that is, if the secretion and absorption do not keep pace with each other, an alteration in the state of the parts must be the consequence.

\* For a more particular description of the structure of these parts, vid. Pott on the Hydrocele.

I shall not dwell at present on the effects of a defective secretion from these surfaces, but if either the fluid be secreted too fast, or, what perhaps is most commonly the case, the powers of the absorbent vessels fail, a tumor is formed which gradually becomes more and more perceptible as the collection increases, and constitutes the Hydrocele.

The size and appearance of the tumor vary in different persons and under different circumstances. At its beginning is usually rather round, but as it increases, if it meets with no resistance, generally assumes a pyriform figure, with its larger extremity downward; the nature of membranes being to stretch and accommodate themselves to gradual distention, it sometimes increases to an enormous bulk, reaching in some cases almost to the knees. If the tumor in its growth meets with resistance, as from a tight suspensory bandage, it sometimes takes a lateral

direction so as to reach toward the groin on one side and into the opposite side of the scrotum on the other.

It is perfectly indolent in itself, though its weight does sometimes produce a small degree of uneasiness in the back. The transparency of the tumor, which is mentioned by some writers as a characteristic of the disease, is not always discernible, being frequently prevented in adults by the thickness of the tunic and scrotum, and sometimes by the opacity of the contained fluid. In infants, the thinness of these parts and the clearness of the water almost always suffer the rays of light to pass through. In some cases it is so distended as to be hard and almost incompressible; in others, though the Hydrocele may have been of long standing, it is so soft and lax that the testicle is easily perceptible; if the tunica vaginalis be thin, the testicle may be perceived; but if the tunic be firm, or thickened, the testis often cannot



cannot be felt distinctly, though, to an intelligent observer, there is almost always a sensation where the testicle is connected, sufficient to direct where a puncture ought not to be made: this is a point of the utmost consequence to be ascertained, as a wound of the body of the testis would not only miss of evacuating the water, but would be productive of the most dangerous consequence. The usual place where the testis is fixed is in the posterior and middle part of the tumor; if the swelling be not very large, it is rather towards the bottom; but as this sometimes varies, the situation of it must be determined by the tactus eruditus of the examiner, and will be discovered by the firmness and hardness arising from the body of the testis, together with its appendage the epididymis, being of a denser or more solid texture than any of the contiguous parts. In every other part of the tumor, the two membranes being

unconnected, and affording a void space for the collection of water, the difference will always be distinguishable.

In most cases of Hydrocele the spermatic vessels may be distinctly felt above the tumor, which is the first mark of the disease to be attended to; it however sometimes happens that the accumulating water meeting with resistance below, rises into the superior part of the tunica vaginalis, and distends it quite up into the ring of the abdominal muscles, so as to make extremely difficult, if not impossible, to feel the spermatic process. This circumstance throws an obscurity on the nature of the case, and confounds it with the appearance of a descent of intestine, or omentum; other symptoms and marks are then to be adverted to: in the Hydrocele the tumor can never be made to disappear by any position of the body, or any pressure of the hand; but in the hernia scrotalis, unless it be adherent,

herent, or incarcerated, the tumor may be returned into the cavity of the abdomen by gentle pressure on it, assisted by a favourable or horizontal position of the body. Or in case it cannot be returned, the patient being directed to cough, a protrusion from the abdomen may generally be discovered by the impulse which it receives from the action of the abdominal muscles; from which the Hydrocele, being unconnected with the contents of the abdomen, is wholly exempt.

Another circumstance which I have remarked is, that on pressing the tumor upward, the superior termination of it, if it be a Hydrocele, will be sometimes evident to the view, though it may be too far engaged within the ring to be discoverable by the touch.

The history of the case often helps to point out the difference between the two diseases, the Hydrocele begins below, the hernia above. Too great attention cannot be given to every



mark of discrimination, as a mistake of one for the other might prove fatal.

It is sometimes difficult to distinguish the Hydrocele from a diseased and enlarged testis, particularly when the texture of the gland is become loose, or when there is some fluid in the body of it, which often happens; the feel of the tumor is then precisely that of a hydrocele. Other circumstances however there are which generally lead to determine its true nature; the greater proportionate weight of the tumor, the varicous state of the vessels, the inequality of the surface, and the painful sensation which usually attends the examination, or handling a diseased testicle, are distinguishing marks of it.

A collection of water frequently accompanies a scirrhus enlargement of the testicle, and in such cases is probably caused by it; but a simple Hydrocele will not produce a disease in the testicle. Some degree of enlargement of  
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the parts indeed we generally find accompanying Hydroceles, particularly those of large size and long duration; but this is not disease, it is probably only the effect of the continued pressure of the accumulating water. It is the nature of membranes to thicken in proportion to the resistance which they are obliged to make. We find this evidently in the tunica vaginalis, which usually grows in thickness as it becomes more distended, and we may reasonably conclude, that the tunica albuginea is thickened by the counter pressure from the same cause, which will give an apparent enlargement to the body of the testis: when the pressure is removed by discharging the water, and its return prevented by the radical cure, provided too great inflammation has not been excited by the operation, the testis appears to grow smaller at the termination of the cure than when the water was evacuated. This effect must be produced

ed by both the tunics becoming thinner and more contracted, and is a sort of proof of the fact being as I have stated, that the most frequent increase in the size of the testis in Hydroceles arises from the thickening of the tunics, and that it is caused by pressure: the same effect is produced in the peritonæum in cases of the ascites, and still more evidently in hernial sacs, in which great distention causes it to grow thick and hard; fluids, collected in the ovaria, in the cavities of joints, in the thecæ of tendons, and I believe may be added, in every part of the body, have generally the same effect to a certain degree, beyond which indeed the efforts of nature, to get rid of the contents, cause the parietes to become partially thin.

A slight enlargement therefore of the parts is not a prohibition to the radical cure of a Hydrocele, though a cancerous or scirrhus state of the testis certainly is, as it would  
be



be highly imprudent and unsafe to irritate and inflame an already distempered gland.

Considering then the disease as a simple, well defined Hydrocele, which, though not a painful complaint, is obstructive to the exertions of the indigent and laborious, a considerable impediment to the active pleasures of the opulent, and is found to be so unseemly, inconvenient and troublesome by all, as to demand the assistance of surgery; we will next proceed to examine the various means which have been practised for its relief.

#### THE PALLIATIVE CURE.

THE evacuation of the water is sufficient to remove the present inconvenience arising from distention, and should in general be performed at least once on those who determine to undergo a radical cure, as it gives an opportunity of examining the state of the testis, and also of permitting the  
cavity

cavity to be filled again, only to such a size as may be thought to be best calculated to insure success in any future operation.

The palliative cure consists in drawing off the water by a puncture made through the scrotum and tunica vaginalis; for this purpose some have preferred the lancet, others the trochar. I make no scruple in recommending the latter, as it completely evacuates the water with ease and expedition. When the wound is made by a lancet, nothing is left to maintain a communication between the opening in the scrotum and that of the tunica vaginalis, consequently the water is often either prevented from coming out of the sac at all, or it escapes into the cellular membrane, and cannot find the passage through the scrotum; to obviate this, the practitioner, as I have often remarked, is obliged to introduce a probe, which cannot always be readily effected, and makes the operation painful and

tedious. The only reason for doing it with a lancet, which, in my opinion, can obtain, is when there is any doubt of the nature of the case, or the situation of the testis; under such circumstances a small incision may certainly be conducted more superficially, and with less hazard, by means of a lancet than by a trochar: but when no such circumstances exist, the trochar is preferable. The best method to do the operation is to grasp the upper part of the tumor with the left hand, as tight as can be without giving pain, then to plunge a small trochar into the anterior part of it, rather lower than the middle, the finger being previously applied to the cannula to regulate the precise depth it is to penetrate, and any blood vessel which may be visible being carefully avoided. The stile is then to be withdrawn, and the cannula left till the water is evacuated.

I have never found a patient, who has undergone



dergone both these operations, choose again to submit to the lancet; they are, however, both easily practicable by any one who is acquainted with the structure and situation of the parts concerned; and the evacuation of the water, as was observed, affords a temporary relief; but the necessity of the frequent repetition of it, from the almost constant return of the complaint, the inconvenient magnitude which the tumor must attain before it can safely be attempted, with the danger, and sometimes pain, attending the dissection, render the producing a permanent cure a most desirable object.

The methods which have been employed for the radical cure of the Hydrocele are many: in giving an account of them I shall follow the order in which they are laid down by the learned Monsr. Sabatier. Indeed this gentleman has considered the subject with such accuracy, that little can be said with regard to

to the history or description of them, which is not to be found in his excellent memoir. His observations, therefore, I shall freely make use of, and in doing this shall render some of my readers the greater service, as his work, I believe, has not yet appeared in our language, and is not so universally known among us as it deserves.

The operations may be reduced to six principal ones; the incision, the excision, the caustic, the tent, the seton, and injections.

#### THE INCISION.

AN incision through the whole extent of the Hydrocele, so as to bring the naked testis completely into view, is the most ancient operation we have any account of; it was practised even before it was known that the complaint was susceptible of a palliative cure. Galen was the first who mentioned that it

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might be relieved by evacuating the water through a cannula, introduced by means of a puncture; but Celsus, who preceded him by about a century, described the operation of incision. The operation, he observes, should be done on the scrotum at the time it is most full, and the fluid most abundant, and when the patient is adult. When the water is in small quantity, or the subject is young, the operation should be performed in the groin, after having raised the tumor towards that side; it is not sufficient to evacuate the water, but part also of the coats which contain it should be removed; the wound should be cleansed and washed with water in which salt and nitre are dissolved. This is all which Celsus says on the subject. It is not very clear whether or not he means that the incision should be made the whole length of the tumor, and how the dressings were applied we are left to conjecture,



ture, unless he deemed it unnecessary to repeat the directions which he had given in another place, particularly in cap. 19, lib. 7, where he has described at length the method of treating wounds after any operation of incision into the scrotum.

Paulus Egineta is much more exact in this respect; he omits no precaution which may be necessary to ensure the success of the operation. The patient, he says, should be placed on his back, his loins sustained by pillows, and the scrotum by a sponge placed underneath. The incision is to commence at the middle of the tumor, and to be carried to the upper part of it, in a line parallel to the raphè. This incision is only to go through the teguments; the bag which contains the water is then to be opened, and part of the sides of the sac to be taken away; after which a director is to be introduced, and conveyed to the bottom of the scrotum, and a division

is to be made to the bottom, that the discharge of blood and matter may find a free exit: the cavity is to be filled with lint, and the neighbouring parts and the belly are to be fomented; when the wound is cleansed, and partly incarned, the lint is to be lessened, and simple dressings continued till the whole wound is healed.

Albucasis describes the incision with the same exactness, and almost in the same terms; but he adds two very material circumstances; the first is, that, after this method of treatment, the Hydrocele is liable to return, the sac not being destroyed; and the other is, that the testis sometimes escapes out of the lips of the wound. Great care, he observes, should be taken to return it, and keep it in its place. This accident depends on the retraction of the sides of the skin, and of the membrane which contained the water; for the testis itself shews no disposition to

leave its original situation, and can only give way to the action of the parts which surround it: nevertheless, the precept which Albucasis gave is very important; and we meet with the same caution in other authors.

Since the end of the eleventh century, when he wrote, we find no mention of this method for a great length of time; practitioners recommended others, as, the cauterization of the sac, the use of the tent, and of the seton. Hildanus first resumed the cure by incision, and appears to have practised it; the sixty-sixth observation of the fourth century is a proof, and furnishes at the same time an example of the success which attended it. The patient was forty-five years of age, of a robust constitution; he had long been subject to a Hydrocele of such bulk as to be very incommodious to him. After the proper preparation, an incision was made



through the teguments, the tunica vaginalis was brought into view, and was then divided through the whole length: the cavity was filled with a large tent, which was placed the whole length of the testis to the bottom of the sac. The patient recovered. Hildanus observes, that this method should be used with great circumspection, as it is sometimes followed with serious consequences, which put the patient's life in most imminent danger.

This is not the only author who has seen bad consequences from the operation by the incision.

Dodonæus cites a case in which the incision was followed by gangrene, and caused the death of the patient.

Wiseman, one of the distinguished surgeons of the last century, observes, that it is often followed by colic, fever, hiccough, and gangrene, when the patient is of a delicate constitution.

Mr.

Mr. Cheffelden, who was by no means a timid operator, says he has done the operation by incision, and seen it done by others; but never thought the cure worth the trouble and pain the patient must necessarily undergo.

According to Heister's account the curatio perfecta, by which he means the incision, confines the patient many weeks to his bed, is painful, and in some measure dangerous.

We find also instances, in the most modern authors, in which this operation has been the cause of very serious consequences.

Mr. Sharp, in his treatise on operations, relates two cases where the incision produced very dangerous accidents. The first is in a man of a robust and good constitution, whose Hydrocele was opened the length of four inches. In the evening, after the operation, he had a fever; the scrotum and testis began to inflame and tumefy; the patient felt severe

pains in the region of the loins: from the third day to the seventh he was in great danger till the suppuration appeared to be established, after which he grew better; but the testicle suppurated, and a large quantity of matter was formed. The discharge did not begin to diminish till the twenty-fourth day; adhesions were then formed between the testicle and the membranes of the scrotum, and the forty-third day the wound was entirely healed.

In the second case there was also a violent symptomatic fever, which terminated in an abscess in the testicle; the patient, who was only eight years old, very narrowly escaped with life.—On the whole, he concludes, that both incision and caustic are attended with so much danger, that, notwithstanding the success in the end, he believes whoever reads the cases will be inclined to reject both methods, and abide rather by the palliative  
cure;



cure; and again, that he has known a few examples in favour of the operation, but by no means enough to warrant the recommendation of it, unless to such persons as are inconsolable under the disorder, and are willing to suffer any thing for a cure.

Mr. Warner observes he has never seen any fatal consequences arise from the incision; but advises that it should only be practised upon those who are of a good habit of body, and who have not exceeded the middle stage of life.

The authorities which have been quoted are certainly adverse to the operation of incision; but to treat it with that impartiality which I would wish to preserve, it is proper to remark, that it has been practised by surgeons of the first reputation and abilities, and that it is still preferred by some ingenious practitioners among the moderns to the seton or caustic.

Mr.

Mr. Bell, in his System of Surgery, after having enumerated all the methods which have been employed for the cure of the Hydrocele, has reduced them to three as now generally in use, the incision, caustic, and seton; of these he prefers the incision: but his account does not convey a very favourable impression of either of them, as he says "he has seen all the three methods produce troublesome symptoms, such as great pain and tension of the abdomen, inflammation and fever: and again, if *either* of them be practised on persons otherwise diseased, on old people, or of infirm habits of body, the symptomatic fever is apt to run too high for the strength of the patient, and the supuration, produced by a high degree of inflammation, tends afterward to destroy entirely the remains of a constitution already much impaired."

The same writer recommends the incision  
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to be performed in cases where, from accident, the Hydrocele is burst, and the water is diffused in the cellular membrane under the scrotum: his words are, “ Instances of the scrotal anasarca of a local nature have also occurred from the rupture of the Hydrocele of the tunica vaginalis testis; when this species of Hydrocele arrives at a great size, jumping from a height, or a violent blow or bruise of any kind, will readily burst it, and the water not finding a passage outwardly must necessarily diffuse itself over the whole scrotum. Different instances of this kind have been met with, two of which are related by Douglas; and the same kind of swelling has been produced by the water of a Hydrocele of the vaginal coat being improperly drawn off by the operation of tapping. When the orifice in the skin is allowed to recede from the opening into the vaginal coat before the water is all discharged, the



the remainder of the collection is very apt to diffuse itself through all the cellular substance of the scrotum.

“ In whichever of these ways the swelling is produced, the cure ought to consist in laying the tumor sufficiently open, not only for evacuating the diffused water, but for effecting a radical cure of the Hydrocele of the tunica vaginalis.”

Here I must take the liberty to observe, that I have seen and could enumerate many instances of the accident of large and much distended Hydroceles being burst by blows against the pommel of a saddle, by falls from horseback, and other causes. I have known several times the cannula of a trochar slip out of the tunica vaginalis, and permit the water to run into the cellular membrane under the scrotum; but I never saw a single instance of the kind where the extravasated fluid was not perfectly and totally absorbed,

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in a very small space of time, without the necessity of incision, puncture, or any other operation. After which the Hydrocele again increased, as if the palliative cure alone had been performed, and became by degrees fit for a radical operation. So that, if the incision in this case be used for evacuating the diffused water, I apprehend it to be wholly unnecessary : and if it be intended to effect a radical cure of the Hydrocele, while the tunica vaginalis is in a collapsed state, and the cellular membrane of the scrotum loaded with water, probably also inflamed by the distention, it must surely be a most improper time to undertake it ; and I should conceive, few practitioners would think it right to perform such an operation under such circumstances.

When Mr. Pott first published on the Hydrocele, the incision was the most usual mode of obtaining its cure, and consequently came in for its full share of description in his  
general

general treatise on that complaint; from thence, however, it has been inferred, that he was the patron or adviser of that operation; but, though he gives an accurate account of the method of performing it, and prescribes the best means of avoiding the evils which frequently arise from it, whoever will carefully consider the whole of his account, must observe the caution with which he speaks on the subject, that he excludes the unhealthy and infirm, and only thinks it practicable on the young and vigorous; and he remarks, that it can never be said to be totally void of danger, and that it bears the appearance of an operation of some severity. On the whole, it clearly appears that he was not satisfied with it, and the fact is, that he did not perform it during the last twenty-six years of his life, in which time it has not been practised at St. Bartholomew's hospital.

I must confess I took an early and deep-rooted



rooted dislike to the cure of Hydroceles by incision, which more mature observation and experience have not in the smallest degree removed, as I have constantly remarked it to be extremely severe in the execution, and that great tension, pain, and fever, are generally its immediate consequences; after which the progress of the cure is often slow and tedious, requiring in some cases, though under the care of the ablest practitioners, many months for its completion.

The bad symptoms which have attended this operation have been attributed to the difficulty with which membranous parts suppurate; on which account it has been advised to touch the tunica vaginalis with gentle escharotics, in order to bring on a suppuration. It has been also recommended to scarify it to promote its exfoliation.

That the operation of incision, according to the method in which it has been usually practised,

practised, may prove a radical cure of the Hydrocele, the whole interior surface of the sac must suppurate and granulate. That it is not calculated to procure an union by the first intention, as has been suggested, must be evident, for whether the cavity be filled with lint, farinaceous matter, or any other substance, the coats are equally prevented from immediate union; after which, the next process which nature adopts in order to unite contiguous parts must take place, and if the cavity be not filled up with granulations, or if any part remains which does not contract an adhesion to the testicle, a new collection of fluid may take place, and thus the complaint be renewed. Albucasis mentions the possibility of this, and it has been confirmed by the experience of the moderns. Many instances have been produced of this fact having happened after the wound has been healed. Mr. Sabatier mentions

mentions a case in which a collection took place on each side of the cicatrix after it had been firmly established, and required to be let out by two incisions; and another instance in which the patient submitted twice to the operation by incision, which were both done by a very able surgeon; but the water collected again, and he was afterwards obliged to suffer the sides of the sac to be taken away before the cure was completed.

I have lately seen a gentleman, who underwent the incision in Ireland, in whom a collection of water was again formed in the same part, and such was his dread of what he had suffered from the operation, that he permitted it to increase to an enormous size before he would submit to any other means for his relief.



## EXCISION.

It is commonly supposed that the excision of the sac of a Hydrocele is as ancient as the incision. Celsus is said to have clearly described it. It is true that this author, after having recommended to take away a part of the bag in which the water is contained, says, if the complaint has its seat under one of the interior coats of the testicle, an incision through the scrotum should be made, to lay the tumor bare, and to extirpate it entire; at least this appears to be the meaning of the Latin text, which is not always perfectly intelligible—*si sub mediâ imâve tunicâ, totæ hæ extra scrotum collocandæ, excidendæque sunt*. But can Celsus mean that we should take away the whole of the tumor, and consequently that the testicle should at the same time be extirpated? or that we should only remove the  
 membranes

membranes which serve for the ~~coat~~ or covering of the Hydrocele? This it is difficult to determine, but in another place he clearly recommends preserving the testicle. *Purgatus ita testiculus, per ipsam plagam cum venis & arteriis & nervo suo leniter demittendus est,* lib. vii. cap. 19; and still more particularly in a passage of the same chapter before quoted. On the whole, I am perfectly satisfied that Celsus means to dissect off as much of the sac, wheresoever it shall be situated, as can be done consistently with the preservation of the testicle, and expressly with a design to obliterate the cavity, that there may be no future lodgment for a fluid.—Galen, who followed him, is of opinion that the part affected should be taken away with the disease.—Albucasis appears to be the first who has unequivocally described the excision. When the teguments have been divided, he says we must dissect and open the

membrane, and let out the water, after which “ incide syphac qualiter-cumque est possibile tibi incidere ipsum aut cum totalitate sua, aut frustatim, præcipue ejus latus subtile, nam si non exquisite perscruteris in incisione ejus non fit securitas quin aqua redeat. Si autem procedit ovum exterius a cute sua, in horâ operationis tuæ, tunc, quando compleveris sectionem syphac, reduc ipsum.”—This last circumstance is decisive; if the testicle is forced out of its situation during the operation, it should be replaced after having taken away the membranous production which contained the water. It is clear then that Albucasis did not advise the extirpation of the testis, he only prescribed the excision of the sides of the bag which forms the Hydrocele.—Fallopius recommends the same method, which he mentions as an invention of an old date; however he thinks it only applicable to particular Hydroceles.

Although



Although the excision is clearly described by Albucasis and Fallopius, it is not again taken notice of till we meet with it among the moderns; either it was not understood, or it was deemed too difficult and too cruel to be executed.

We find some of the French writers recommending the excision of part or the whole of the sac when it has been much distended or is much thickened and hard.

Mr. Douglas has asserted that the excision of the sac is the only method which ought to be used, if we are obliged to use a cutting instrument for the cure of the Hydrocele; he seems to have been determined in this opinion by the bad success which attended his first operation by the incision; his patient had very alarming symptoms, such as great pain, inflammation, fever, and a tumefied hardness of the cyst. These symptoms were not abated till the cyst was scarified

fied through its whole extent, and in a manner divided into slips. The separation of these small portions being easily accomplished, Mr. Douglas thought he should succeed better if he took away the whole of the cyst; he soon had an opportunity of trying this new method, and it was attended with all the success which he expected. The symptomatic fever which followed was less, the treatment more simple, the cure completed in less time, and a return of the complaint impossible. The method in which Mr. D. advises the operation is as follows: The patient being properly placed, two incisions were to be made in the scrotum forming an oval, and reaching from the upper to the lower part; this oval portion to be dissected off, after which an opening was to be made in the sac, and enlarged by scissors; the tunica vaginalis was then to be extirpated entirely, close to where it is connected with the spermatic vessels; an assistant

ant supporting the testicle during the operation, and afterwards replacing it in its proper situation; the cavity is then directed to be filled with dry lint.—Mr. D. directs the oval piece of skin to be dissected off before the opening in the tunic was made, because he had been embarrassed in a former operation in which he had omitted it; the lips of the wound turning in, he was not able easily to get at the internal part of the tumor to dissect off the tunic; he recommends great caution not to injure the testicle or spermatic vessels.

This operation, though followed by Mr. White of Manchester, and many other surgeons of eminence and character, must have been tedious, and exquisitely painful in the performance; and, from the manner in which it was directed afterwards to be treated, must have been attended with violent and dangerous symptoms. Yet I am decidedly of opi-



nion, that the excision is less objectionable than the incision, provided it were necessary to *open the Hydrocele at all* in order to obtain its cure; but in that case I am also clear that the best method would be, after having removed the whole of the cyst, to bring the sides of the teguments into contact, and not to prevent their immediate union by any intervening substance whatever; by this method, that exquisitely sensible membrane the tunica albuginea would remain covered, and not be exposed to irritation from the air and from topical applications, which circumstances are the principal causes of the violent inflammatory symptoms which usually follow such exposure; but I hope to be able to prove, that such an operation is seldom, if ever necessary.

#### THE CAUSTIC.

SOME of the earliest practitioners were not content with simply dividing the sac of  
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the Hydrocele, in order to induce a suppuration of the membranes, and consequently an adhesion of the surrounding parts to the testicle; nor in taking away the membrane to prevent the possibility of a new collection: Some of them proposed to open the bag with the actual cautery. This is recommended by Paulus Egineta. In the operation which he describes, the skin is to be destroyed by a cautery of a particular form, the eschar which is left with the cellular membrane to be dissected away, a cautery of another shape is then to be applied to the membrane.

On the pain and horror attending such a process it is unnecessary to remark. Franco speaks of this method, but in a cursory manner.—Marcus Aurelius Severinus practised it; he says he performed it with success on a friar and a citizen of distinction in the town of Tarentum. The sensations of these unfortunate patients may be readily conceived,  
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and humanity bids us hope their fellow sufferers were few.

The caustic appears to be of later date. Sabatier supposes Hildanus to have been the first author who takes notice of curing a Hydrocele by the application of a caustic. But it appears that, two hundred years prior to Hildanus, Guido de Cauliaco takes notice of the use of caustics in two different modes, one after the incision—Cum phlebotomo aperio & aquam extraho, deinde ad consumendum folliculum, modicum arseneci appono cum xylo & cotone & post casum æscharæ, consolido & firmiter sigillo, tract. 2d. doct. ii. cap. 7. He took this practice, he says, from Avicenna and Halyabbas; he then adds—Nonnulli vero, ut Magister Petrus de Orliaco, caustico & corrosivo super pectinem locum aperiunt usque ad didymi vacuitatem, postea perforando, ducendo caudam specilli usque ad locum aquæ, ipsam extrahunt, & post casum æscharæ



charæ consolidant & sigillant, alii autem cauterio actuali predictam operationem perficiunt, ibid.

Wiseman made use of caustic for the same purpose ; he relates his having applied it to a very large Hydrocele, a copious quantity of water and bloody matter were discharged, the wound was dressed with a mild digestive: The following night the patient was attacked with fever and pain in the abdomen. The dressings were continued till the cyst entirely sloughed.—This patient had also a Hydrocele on the other side, which was divided with a cutting instrument; the symptoms were nearly equally violent till the sac digested off, which happened in about twelve days. The cure was sooner completed by the second process than by the first, and Wiseman observes, the suppuration of the cyst, so necessary for the radical cure, is not less certain by the incision than by the effect of the caustic.

Some

Some modern authors recommend the caustic for the radical cure of the Hydrocele. Dionis advises to apply a line of caustic the length of the tumor, and to cause the sac to suppurate; his commentator De la Faye is of a different opinion, and says, that the inconveniences which practitioners have experienced from the use of caustics, have caused them to be laid aside; but he does not specify of what nature those inconveniences were.

Garengéot mentions several objections to the use of caustics; he says the action of them is slow, and not sufficiently powerful, yet that they frequently are extended to a larger surface than is meant; that an instrument must afterwards be used to divide the eschar, and that the caustic particles sometimes mixing with the water of the Hydrocele, communicate their corroding qualities, and produce irreparable mischief. The last objection does not appear to have much weight,

weight, and indeed is completely contradicted by another practitioner, who recommends the application of a caustic the length of the tumor, then to divide the eschar down to the sac; after which he advises a fresh application of caustic to the sac, and does not fear any harm being communicated to the testicle, because so soon as the caustic meets with the water, its power and action are blunted and cease.

The application of a large caustic continued in use, for a considerable time, among many practitioners. Mr. Gooch succeeded equally in the cure of Hydroceles by removing an oval piece from the scrotum, and dissecting away the tunica vaginalis, as by the application of a caustic on the tumor; but, for reasons which he has assigned, he preferred the former.

Heister appears to have several times used it with success. — Sharp says he has seen material ill effects arise from it; he applied to a  
large



large tumor a caustic, an inch broad and six inches long, the day after he divided the eschar and let out the water; from the third to the ninth day the patient complained of great pain in the part, in the back, and kidneys; the symptomatic fever was violent, and there was no sign of digestion in the wound. These symptoms more or less continued to the thirty-third day, when the patient grew better; but two abscesses were formed, which it was necessary to open. The patient got well in about sixty days. This case certainly does not tell in favour of caustics for the cure of Hydroceles, yet the greatest part of the bad symptoms related probably arose from dividing the eschar, and letting the air have access to the testicle; if the scrotum had been suffered to contract and throw off the sloughy membrane by degrees, these symptoms, if they had arisen at all, would have been much more moderate.

Caustics

Caustics have not always been employed with the same views; instead of being used to open Hydroceles through their whole length, as is done by a cutting instrument, some have proposed to make a small opening in the middle of the tumor, sufficient to discharge the water, and to excite in the internal part of the sac an inflammation and supuration; after which an adhesion would take place between the teguments and the testicle. This method has been practised a considerable time in this country. The late Mr. Else has left a well written account of it. The method which he recommends is as follows: "To lay a small caustic upon the anterior and inferior part of the scrotum, sufficiently large to produce an eschar about the size of a shilling, which is intended to affect, and, if possible, penetrate through the tunica vaginalis. Sometimes immediately after removing the caustic, sometimes within twelve

or twenty-four hours, the patient begins to complain of pain in the scrotum and loins, has now and then some cholic pains, the pulse a little quickened, and the tongue whitish; at different periods of time after removing the caustic, an alteration is perceptible in the scrotum; the tumor feels more tense or hard, in a few days the eschar of the scrotum will loosen and come away, exposing to view the tunica vaginalis, which bears evident marks of its having been affected by the caustic, and being prepared to slough off. As the cure proceeds, the sloughy tunica vaginalis will project more through the orifice in the scrotum; if the water be discharged by puncture, the scrotum by degrees collapses, and the orifice in it is filled up with slough, which prevents the access of external air to the testicle. These sloughs continue to come away with the dressings daily, for about *four, five, or six weeks*, and in proportion



proportion to their discharge the hard tumor of the scrotum lessens. Whoever will carefully attend to the several appearances that accompany this method, must be satisfied that the caustic excites an inflammation of the tunica vaginalis, which spreads through the whole of it, in consequence of which the *entire membrane suppurates and comes away in sloughs.*"

This method was certainly a great improvement on the former manner of applying the caustic; by not dividing the eschar, and no air being admitted, the inflammation was not violent; but, though preferable to many of the other operations, it appears to be in itself extremely exceptionable, as it causes an unnecessary destruction of the parts, and produces a tedious, painful, and offensive sore: for it is evident, from the passage which I have quoted, that it was Mr. Else's intention, and he generally succeeded in it, to

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produce

produce a complete flough of the whole tunica vaginalis.

#### THE TENT.

THE use of the tent for the cure of Hydroceles is not of very old date. It occurs first in the works of Franco, who seems to have had great confidence in it. An opening he recommends to be made in the scrotum of two or three inches; but the length of the incision must depend on the age of the patient and the size of the tumor. This wound, he observes, must be kept open with a tent of lint, linen, or sponge; the larger the opening, and the longer time it takes to heal, the greater is the certainty of the complaint not returning.

Pare, describing the same method, speaks of it as having been successfully used by some; but which himself had not practised, as indeed is evident from the indistinct and imperfect

account of it which he has given. He appears to prefer the seton.

The method of using the tent is described by Guillemeau in this manner—The tumor is to be opened in its upper part by a right line, the incision should not be large, and should penetrate into the cavity where the water is collected, great care being taken not to injure the testis or the spermatic vessels; the tent is then to be introduced.—The opening he advised to be made in the upper part of the tumor, as least likely in that part to injure the spermatic vessels; but this practice probably arose from an idea, that the water of the Hydrocele came from the abdomen, and found a passage by the spermatic vessels, and that the cicatrix in that part would prevent its reproduction. If this method be followed, water and matter must be collected at the bottom of the tumor.

Covillard, in his account of the different



methods of curing the Hydrocele, does not forget the tent; he first speaks of the place where the incision ought to be made; Paulus Egineta and Celsus, he says, advise it to be done from the middle of the scrotum to the groin; while Avicenna and Gulielmus e Saliceto wish it to be made in the lower part. Here he appears to be rather mistaken, as neither of those authors say a word on the subject of the tent. Covillard indeed recommends the incision to be made nearly the length of the tumor, and to take away part of the cyst, by which means his operation did not greatly differ from the incision which was practised by the authors he has quoted; he then advises to apply a large and long tent of lint, and, to prevent any return of the complaint, the wound is to be kept open a considerable time by means of tents armed with digestives: he concludes with saying this method of operating is very certain, but

is not free from danger in some habits, and may be followed with inflammation and gangrene.

The tent was in use at the time of Nuck; it was then the most common operation. Ruysh, his compatriot and contemporary, speaks of it in the most positive manner, and shews that he had particular experience of it; he says, when a Hydrocele is opened by a trochar, or lancet, the tumor soon appears again: but, if an opening be made in the scrotum in the upper part and on one side, and a tent is introduced covered with ointment mixed with red precipitate, till a gentle inflammation, followed by a moderate suppuration, has rotted the membrane in which the water is contained; and, if this membrane be taken away piecemeal, he observes, it is a perfect cure, as he has several times experienced. The authority of Ruysh, who was well acquainted with surgical business, and

held a distinguished rank among anatomists, is not to be disregarded; yet how can we conceive success to have followed if the incision was made in the upper and lateral part of the Hydrocele? Is it not probable that a collection of matter must have been formed in the lower part of the tumor, from which there could have been no depending opening by the wound, as it was directed to be made?

Modern instances might be brought of violent inflammatory symptoms following such practice, attended with mortification, and even a fatal termination. If the tent be used, the opening for it should undoubtedly be made in the lower part of the scrotum; one of the first and most useful principles in surgery is to gain a depending opening for matter, or any fluid which we wish to discharge, and is particularly applicable in this case, where a contrary practice must be productive of the  
worst



worst consequences from the extreme irritability of the parts concerned.

Other authors have recommended the tent with little variation, so that it is obvious that the use of the tent for the cure of Hydroceles was long practised. It does not, however, appear to have been in use among the French surgeons before the middle of the sixteenth century, and I do not find it after the beginning of the present, except in Heister, who rather describes than advises the operation; but, if it was abandoned by the French, it continued to be the practice of the Italians, as it is much recommended in a work intitled, *Pratica delle piu difficili operazioni di chirurgia che riguardano il Lithomomo e l'occulista*; printed at Rome 1723, in octavo. This is the work of Jerome Marini, and, if we take the opinion of Haller, is a very moderate composition. Marini adds nothing to the manner of using the tent, except that it

should be armed with medicaments of different qualities, according to the different states of the treatment.

Dr. Monro, in later times, conceived a process which had some analogy to the use of the tent. This was to irritate the anterior part of the sac by leaving the cannula some time within the cavity, but the consequences of them were very different; the tent was intended to cause a suppuration of the sac, and the external surface of the testicle, at least the tunica albuginea. On the contrary, the intention of Dr. Monro was only to excite such an inflammation as might be followed by a cohesion of the parts; as he had often seen Hydroceles cured, in a manner spontaneously, by an inflammation which was accidentally produced, he conceived he might bring about such an inflammation by art; but he was aware that this must require great care, and that

that the surgeon should always be able to regulate the degree of inflammation; he therefore rejected irritating remedies, of which he could not immediately prevent the effect. He thought he should succeed better by the cannula of a trochar left in after the evacuation of the water, as the cause of irritation might be removed whenever it was thought that sufficient inflammation was produced. *Monro* never practised this plan himself, and he recommends it with great diffidence; the hint, however, was sufficient to induce *Mr. Pott* to try it, and to ground on it his operation of the seton.

Perhaps *Monro's* plan may be traced in *Fabricius ab Aquapendente*; after having advanced that the Hydrocele is sometimes cured by a simple incision in the lower part, although it be suffered to close again immediately, *Fabricius* adds, that some practitioners keep the incision open during some days



with a cannula of silver; undoubtedly they only proposed to preserve an opening by which the water, if any should collect, might find a free exit; but every one must see that a cannula remaining in the cavity of the tunica vaginalis for some days, must rub and fret the testis, and the inside of the tunica vaginalis, and bring on an inflammation. If we believe Fallopius, Galen has advised to leave a cannula in the sac of a Hydrocele during some days; but on consulting the works of that author in the place quoted, there is no expression sufficiently precise to determine that to have been his intention.

This method has not much obtained in practice; Mr. Pott tried it, and assures us that it was not followed by bad consequences: he only observed that the presence of the cannula was very inconvenient, and that the inflexibility of it hurt the testis when the patient moved with inattention. The tent and  
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bougie which he substituted in its place were not nearly so incommodious, but the effects produced by them were very uncertain; and, on the whole, he was of opinion, that it was not to be depended on.

Mr. Warner made some trials of the tent, of which he has related four cases; in the first he introduced a piece of sponge which continued twenty-four hours without producing any sensible effect, and was suffered to remain to the third day, when the scrotum became hard and inflamed; the fourth day a small quantity of matter transuded; this discharge continued to increase during ten days, after which a little abscess formed which furnished some matter, the discharge then diminished, and the membranes contracted an adhesion to the testis.

This is the most favourable case which Mr. Warner has recited, and he pronounces it an easy, safe, and simple cure; but we  
must

must remark that there was an abscess formed, which was opened by an incision.—In the second case the inflammation rose to a much greater height; the third day after the operation the patient had sickness, attended with vomiting and fever; the fifteenth or sixteenth day the scrotum burst in two places near the original puncture, from which openings there issued a considerable quantity of matter mixed with a slough.—In the third instance the patient was attacked with a rigor on the eleventh day, the inflammation increased to a great degree, and matter was formed which burst its way through the scrotum; yet, notwithstanding the violence of the inflammatory symptoms, there appears to have been a beginning fresh collection of lymph in a portion of the tunic which had escaped the inflammation. — In the fourth case the symptoms were not much more favourable, the scrotum imposthumated and burst,



burst, and a great deal of fetid matter was discharged.

As this is a method which I have never practised, I have been more particular in relating the practice and opinions of others; and, from what may be fairly collected from the general account, I conceive the operation does not stand in a very favourable light.

#### THE SETON.

No traces of the use of the seton for the cure of Hydroceles are to be found among the ancients; this remedy, which was invented by the Arabians, was not applied to this disease till after the time in which they wrote. The first mention of it is in a work of Guido de Cauliaco in 1363; he says the Hydrocele may be emptied by means of a seton, which may be done in this manner: the tumor is to be taken hold of by a pair of forceps, flat and pierced with an opening  
near

near the ends of the blades ; through these a needle is to be passed, carrying a seton, which is to be left behind until the water is entirely evacuated.

Fallopious speaks of this method as new, but does not approve of the forceps recommended by Guido ; he thinks it sufficient to pierce through the Hydrocele with a proper needle. Fabricius ab Aquapendente also mentions the seton, though he does not suppose it likely to produce a radical cure in every case.

We meet with the same doubts of the certainty of success from this operation in a Treatise on Herniæ by Franco. This author asserts that the most certain method is to extirpate the cyst along with the testicle, or, in other words, to castrate, as after any other operation the tumor is subject to return at the end of five or six months or sooner. The manner in which he advises the seton to

be

be passed is the same which is mentioned by Guido and Fallopius, and says it may be done either with the forceps, through which the needle may be passed, or the needle may be used alone ; but then it must be curved. When the first method is used the needle should be made red hot, and passed quickly, that it may not cool in traversing from one opening to the other. Sometimes it is necessary to use the other method, as, when the bag is very full and much distended, the forceps would require to be pinched with too great force in order to bring the blades sufficiently close, and he observes that no means ought to be neglected to prevent inflammation ; if it rises too high the seton must be removed, if not, the seton is to be only moved every day, to favour the discharge of the water. Notwithstanding the strange awkwardness and inconvenience of conveying a seton by means of the forceps,  
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it was the method which Pare made use of, and appears to have been his common practice, as it is the first of which he has given a description.

The seton, though not generally adopted, continued in use in the time of Covillard ; it was conveyed by means of a needle half a foot in length, the point heated red-hot, and carrying silk nine or ten times double ; he prefers this method, because it is often difficult, from the size of the tumor, to make the holes in the blades of the forceps meet ; but says this method is not always successful, owing to the inflammation of the openings not permitting the water to find a passage out. Other authors speak of the uncertainty of the success of the seton as a radical cure, but recommend it as a palliative cure in Hydroceles of the tunica vaginalis ; others think it only applicable where the water is diffused through the cellular membrane.

Heister

Heister, the faithful reporter of all the methods of operating which are known to him, in treating of the radical cure of the Hydrocele, does not omit the seton ; he describes it as done with a needle ; but adds, that the seton should be imbued with digestive and caustic medicines, and advises it to be suffered to continue in the sac a month, as the former failure of success he ascribes to not letting it remain long enough, by which, sufficient inflammation was not excited to produce the adhesion of the membranes with the testicle : but, as by this process a knowledge of the state of the testicle is not procured, he says, practitioners in general prefer other methods.

The objections which Heister made are the same which since occurred to Mr. Douglas :—he observes, that it is not necessary to insist further on the use of the seton, for, besides that the application of it is extremely

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painful,

painful, it does not produce a suppuration of the cyst, and gives no opportunity of knowing the state of the testicle; the action of it also is so slow, and productive of so much irritation, that he does not think it an advisable operation.

The disadvantageous light in which almost all the practitioners had left this method, did not prevent Mr. Pott from making trial of, and adopting it. The disgust which he had conceived for the painful operation of incision, and the unnecessary destruction of the sac, even in the best way of employing the caustic, led him to endeavour to steer clear of both, by a method which should not be painful in the execution, and should only procure an adhesion of those parts which the caustic made necessary to come away. Having prosecuted Monro's idea of letting the cannula remain, Mr. Pott was convinced that a foreign body might be endured within the tunica vaginalis without



without risk or danger ; but, as the cannula was found inconvenient and troublesome, he was induced to substitute the seton, which was calculated to lie smoother and softer.—I attended his first essays, which were as follow :—After having pierced the Hydrocele with a middle sized trochar in the lower part, and let out the water, he introduced through the cannula, an eye-probe, carrying a seton of ten or twelve threads of candlewick cotton ; he passed this probe the whole length of the sac against the upper part, and there, on the blunt end of the probe, made an incision sufficient to let it out with the seton which it conveyed ; he then cut off the seton close to the probe, and tied the two ends of it loosely together ; the wounds were covered with a pledget. The morning after, the seton was found to have contracted such firm adhesion to the inside of the sac and the tunica albuginea, that an endeavour to detach it would

have caused great pain; but this was not necessary, as, while untouched, it remained without any inconvenience to the part.

In less than twenty-four hours after the operation the scrotum and testicle began to inflame, and put on the appearance of a hernia humoralis, and was treated in the same manner as is usual in that complaint, with fomentation and poultices, and supported in a bag-truss; attention being paid to keep the patient cool.

The adhesion of the seton to the albuginea continuing firm, it was not meddled with, till, the inflammation lessening and the tumor subsiding, it became loose. This was generally in about a fortnight; by this time the parts had contracted a firm and solid cohesion; the seton was then withdrawn, and the orifices healed with a superficial pledget.

Mr. Pott practised this method on many persons, and succeeded very well. The patients

tients kept their beds a few days, after which they sat on a couch till the cure was complete, which was usually in three or four weeks ; during which time no other regimen was necessary, than an inflammation of the parts from any other cause would require. However, Mr. Pott soon discovered that the manner of performing the operation might be improved ; he found that it was extremely difficult to cut on the end of the probe which carried the seton, and required the assistance of another person. He remarked that the cotton passed with difficulty, and by rubbing on the tunica albuginea gave pain ; that the seton, being made of cotton, adhered in some instances too long and too firmly ; that, from the intimate union of its parts with each other, it could not be brought away but entire, which unnecessarily prolonged the cure, and in two cases it was necessary to make an incision to set it free.



These inconveniencies led him to change his plan, and were completely obviated by the instruments he latterly made use of. Mr. Pott was always averse to multiply instruments in any operation, but in this he found it necessary to make use of three; the first was a trochar, the dimension of whose cannula was about one fourth of an inch; another cannula, called the seton-cannula, made of silver, of such diameter as just easily to pass through the cannula of the trochar, its length five inches, and a probe six inches one half long, having at one extremity a fine steel trochar point, and at the other, an eye which carried the seton; which seton consisted of just so much strong coarse white sewing silk as would without difficulty pass the cannula, but at the same time would fill it. Of late years he made use of a much smaller seton, and found it to answer the purpose better, giving more room to the discharge of any fluid

fluid which might be collected, and being more easily removed at the proper time.

With the trochar the inferior and anterior part of the tumor was to be pierced, as in the palliative operation. As soon as the perforator was withdrawn, and the water discharged, the seton-cannula was passed through that of the trochar, until it reached the upper part of the tunica vaginalis, and was felt in the upper part of the scrotum; this done, the probe armed with its seton was conveyed through the latter cannula, the vaginal coat and integuments were pierced by its point, and the seton was drawn through the cannula until a sufficient quantity was brought out by the upper orifice; the two cannulas were then withdrawn, and the operation was finished. It was executed in two or three seconds of time, and with little more pain than is felt in the palliative operation.

By this method every advantage of the

former operation is retained, and every inconvenience which it was liable to is removed : the seton cannula, by its firmness, bears hard against the place where the seton should be brought out ; the trochar point of the probe is prevented from deviating by its confinement, and its point pierces through the skin immediately, and exactly in the place intended ; while the seton, by passing through the cannula, is prevented from rubbing rudely over the testicle.

The symptoms, which this manner of placing the seton caused, were nearly such as followed the former method, and required the same treatment. When the swelling was diminished, and the parts regaining their natural state, which happened about the tenth or twelfth day, the seton was gradually removed ; the adhesion always made some force necessary to bring it away, but a few only of the threads being withdrawn at a time,



time, the adhesive resistance was small; the dressings were, as before directed, a pledget over the whole scrotum.

I have been induced thus fully to relate Mr. Pott's plan, as I find it has been sometimes either not understood, or not sufficiently attended to; some persons, though intending to pursue the same idea, having acted very differently from his directions, and others having advised alterations which, in fact, are a total subversion of its principles.

The process which he recommends must be allowed to have been carried to a great degree of perfection, and, if the operation be performed without deviating from the directions he has laid down, I am convinced it will be found preferable to any of the methods which have been usually practised in this country. I had opportunities of seeing many of these cases with him, and have myself often practised it; but do not recollect  
more

more than two instances in which the seton failed to produce a cure. I must therefore conclude, that the want of success which has been attributed to it, must have arisen from a misapprehension of the proper manner of conducting it; particularly I must remark a great mistake which has been made in treating it like a common seton, by *drawing it upwards and downwards once or twice a day*, and which is the more likely to mislead others as it is recommended by a modern writer of considerable reputation. If we take into consideration the nature and texture of the parts which are to be thus rudely treated; that there is no gland or viscus in the human frame so susceptible of inflammation, and which swells instantaneously to a greater degree, such treatment must appear likely to produce exquisite pain and irritation.

I must also take the liberty to reply to  
some

some objections, which Mr. Bell has made to the seton ; one of which is, that it does not give an opportunity of examining the state of the testicle. I am at a loss to know what better information of its state any man of science would desire, than he could acquire by the touch, after the water is evacuated, which is always done previous to the introduction of the seton when the operation is *properly performed*; but not, when the trochar is passed into the upper part of the tumor, as Mr. Bell recommends, from having found difficulty in passing the seton needle, while the vaginal coat is in a collapsed state.—If Mr. Bell had introduced the seton-cannula, which Mr. Pott has described, I apprehend he would have found no such difficulty.

By the trochar being introduced at the lower part, the bag is completely emptied, and the testicle is submitted to the most perfect and satisfactory examination; not to



mention that the palliative cure is, or ought to be, in general performed at least once prior to any radical cure being attempted, which gives an additional opportunity of forming our opinion of it. It would be unfortunate indeed for mankind, if it were necessary to divide the scrotum, and lay bare every testicle which requires examination, before we could determine whether it be or be not diseased.

Another objection which this gentleman has made, and has given as a reason why the seton should be entirely set aside is, that it is ill suited for evacuating hydatids: his precise words are, “ It *frequently* happens that the water of a hydrocele *is contained in a number of hydatids*; a circumstance which cannot be discovered previous to the opening of the tumor. And as it will be readily admitted that the method of cure by seton is ill suited for evacuating hydatids, this of itself

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is a very material objection to the practice. So that upon the whole, although the seton in every other respect should be equally eligible with the simple incision, which, for the reasons formerly given, I think it is not, yet the two last objections we have adduced are sufficient reasons for *setting it entirely aside.*"

That hydatids are sometimes formed in various parts of the body must be allowed; but I will appeal to any man of experience, whether they frequently happen in the tunica vaginalis. During near thirty years attendance at a large hospital, besides the private practice of Mr. Pott and myself, I may presume that as great a variety of Hydroceles have reached my notice as most individuals have seen; yet I do not recollect a single instance of hydatids in the Hydrocele, though I have often met with them *floating in* collections of fluid in the abdomen, in the thorax, under the fascia of the thigh, and in other parts; but

but granting that instances of the kind may happen, such particular cases might require an incision to let out hydatids which would not pass through a cannula ; but that an operation, recommended by one of the ablest Surgeons who has ever practised in this or any other country, should be entirely set aside on account of a deficiency in demonstrating that which it palpably points out, or the possibility of the occurrence of a phenomenon, does not appear to me extremely reasonable.

The operation, as Mr. Pott practised it, stands on the most rational ground. The whole of his end and aim being to produce a cohesion without destroying the tunic, or causing it to slough. This the seton certainly effected ; but it must be observed that it went beyond the intention ; being a solid body, an adhesion also took place between that and the part of the sac with which it was in contact, and a suppuration,



suppuration, at least in the track of it, became necessary to loosen so as to make it capable of being removed; add to this, that it was certainly productive of more inflammation than was requisite for the cohesion of the tunics, by which fever was sometimes produced, and abscesses were sometimes formed; and that the matter which was collected and discharged was always peculiarly offensive, owing to the putrid disposition it received from the air, which found a ready entrance through the orifices made by the seton.

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WHOEVER considers what has been related, must observe, that all the methods usually employed to obtain a radical cure of the Hydrocele, when they have proved effectual, have been generally attended with great inconveniences, and sometimes with very alarming danger, both to the functions of the diseased

diseased part and to the life of the patient; and all this risk and danger were incurred to get rid of a complaint in which neither life nor general health were materially interested. No man can reflect on these circumstances without wishing that it were possible to obtain the end by a milder process.

It is obvious that the inflammation is carried too far by continued irritation, and that, if the just and proper inflammation was raised by a cause which could be immediately removed, it must be preferable to letting any irritating foreign body remain, to be cast off by a further process, after the original intention, that of exciting merely an adhesive inflammation, had been answered; and it must be evident to every man of common understanding, that after the inflammation has completely taken place over the surface of the tunica vaginalis, that the continuation of the cause of it must be not only useless but highly prejudicial.

Impressed

Impressed with these ideas, I turned my thoughts to fluids, as alone being capable of causing an immediate irritation, without the necessity of their lodging and remaining in contact with such inflammable surfaces ; the only difficulty remained in selecting the proper fluid, which should do the business effectually, yet moderately.

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#### INJECTIONS.

On further investigation, I do not find that injections for the cure of the Hydrocele were in use among the early practitioners ; nor have I been able to trace any account of them till of late years.

Dr. Monro attributes the first use of injection for this purpose to an army surgeon of his own name. Mr. Monro first made use of spirits of wine, which cured the complaint ; but the inflammation was so violent

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that



that he thought it expedient to try a milder injection; he accordingly substituted wine, which answered the purpose as well, with less violence: but what the quantity was, or how the injection was used, that is, how long it was suffered to remain in the sac, does not appear.

Mr. Sharp, in his treatise on operations, relates a cure of a Hydrocele, which was attempted with sp. vin. but was not attained without danger. The pain which immediately followed the operation was violent, and continued to increase to the day after, when the tumor became hardened and swelled to a great degree. After remaining a month, it terminated in two abscesses on the anterior part of the scrotum. Mr. Sharp had been induced to make this trial, but he does not appear to have repeated it, nor do we find any thing relative to it in his critical enquiry on the state of surgery, published more than ten years after, which

is a sort of proof that it was not practised in England at that time. Indeed the greater part of the English authors who have written professedly on the different methods of curing the Hydrocele do not mention it. Mr. Douglas speaks of it only to shew his disapprobation of the practice ; he says that the vaginal coat is at such a distance, and the surface of the testicle so unequal, owing to the epididymis, that it seems impossible that these two parts should touch with exactness. Le Dran conceives that injections cannot succeed, because it would be impossible to bring the sides of the cyst together so as to touch, and besides that, the process would be liable to bring on inflammation. These reasons, particularly the last, had no weight with me, because it is the very circumstance which is to make the cure.

Mr. Pott also, in his treatise on the Hydrocele, ranked injections among those opera-

tions which, “happily for mankind, were laid aside.” From the deference, which I had always, with great reason, paid to his experience and abilities, this, I confess, was discouraging; but I have now the satisfaction to say that he lived to alter his opinion on the subject, and that it was his intention to have made trial of them.

As I had frequently succeeded in procuring an adhesion and consolidation of parts in sinuses and other large cavities, by injections of various kinds, without causing great inflammation, and had by those means avoided the necessity of the destruction, or extensive divisions of the skin and integuments, which should be avoided as much as possible, not only in the neck and face, or where we particularly wish to preserve beauty, but in every part, as the loss of true skin is never perfectly restored; I conceived the cure of Hydroceles might be effected by the same  
gentle



gentle means, without deranging, in any great degree, the tender and sensible organs which are the seat of the disease, and I was determined to make the experiment. While considering the best method of effecting my purpose, I was not a little pleased to find by Mr. Sabatier's account, that though injections had been neglected in England, they had been often used in France, and I learned that experiments had been made on a great variety of injections; that ardent spirits and solution of caustic had been tried, which had caused great inflammation and much mischief; but that more mild injections had been used with success.

The proper object of all attempts to cure the Hydrocele without destruction of the sac, is to produce such adhesion of the distended vaginal coat of the testis to the gland, as shall annihilate the cavity in which the water constituting the disease is contained. We know that this effect is produced

by a certain degree of inflammation, and are unacquainted with any other process, either natural or artificial, by which it can be brought about.

Injections introduced within the tunica vaginalis, into the urethra, or into any cavity of the body, natural, or formed by disease, are certainly capable of doing mischief; but the mischief must arise from the nature of the injection: if it be violent or irritating it may produce too great inflammation. The caustic and highly stimulating injections which had been most injudiciously made use of, and retained an unnecessary length of time, undoubtedly did harm, and were the cause of bringing injections in general, and for the cure of Hydroceles in particular, into discredit; but it is extremely absurd to infer from such instances, that all kinds of injections must be pernicious. If Mr. Sharp, instead of being alarmed at the bad symptoms which

which succeeded the use of spirits of wine, had diluted it, he would probably not so easily have decided against injections. In the use of injections we are not limited to any degree of stimulus. Injections may certainly be prepared so corrosive as to inflame, and even to dissolve the most indolent parts; on the contrary, they may be used so bland as not to offend the most sensible membrane or surface in the human body, and they may be made to produce any intermediate effect. There is no kind of stimulus which admits of such various modifications.

Other great advantages of injections are, that they apply themselves equally and universally over the whole cavity into which they are thrown, and when they have remained long enough to produce the requisite stimulus, they are easily and completely discharged. These are essential effects which cannot be derived from any solid body.



The injection, which after some consideration I fixed on for the purpose, was wine, which I made choice of for several reasons. I found that it had been used with success in France; I had experienced it to answer well in procuring adhesions in other parts. The strength of wine is never so great as to render it an unsafe remedy, and it may be readily lowered according to the different sensibility of the parts. Thus a vinous injection appeared capable of producing all the good effects which could be desired, with scarce a possibility of doing harm. The success which has attended it has more than answered my expectation, and from every trial which I have made, I have no reason to wish for a different one. The pain which is produced is incomparably less than by any other operation; it does nothing more than is intended, and the curative effect, as far as my experiments have gone, is equally certain.

In my edition of Mr. Pott's works was introduced a circumstantial account of all the experiments I had then made on the subject of injections for the cure of the Hydrocele. As practice is best illustrated by examples, they will be here repeated; and the method being rather new in this country, requiring therefore all the light which experience can throw on it, such further cases and observations as have since fallen within my notice will be added,

#### CASE I.

A MAN, about fifty years of age, was taken into St. Bartholomew's hospital with a large Hydrocele of many years standing. June 21, 1787, in the presence of Mr. Pott, I passed into it a trochar, and let out a very large quantity of fluid of the usual colour and consistence. I found the tunica vaginalis remarkably

markably thickened and unpliant; to the feel not unlike tripe, or buff leather: the testicle was much larger than the natural size. On considering every circumstance, it appeared to be a very unfavourable case for any operation except the palliative: however, as I was desirous to try the effect of injection, and there was no probability of doing mischief, I filled it with port wine diluted with a decoction of red rose leaves. The man felt not the smallest pain; after retaining it a few minutes, I suffered it to be discharged. The next day a small degree of inflammation had taken place; the third day from the operation it was increased, and the whole scrotum considerably swollen: the patient continued absolutely free from pain and fever. By way of precaution a poultice was applied, and he took an opening draught. On the sixth day the inflammation continued, the scrotum much swollen,

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the patient without any other complaint. In a few days the inflammation lessened, but the scrotum was almost as large as before the operation, and, to all appearance, it now contained a fluid. It seemed extraordinary that water should be again secreted and collected in so very short a time; yet, as it was not attended with any pain or inflammation, I concluded that it was possible; and, being the first attempt which I had made, I was rather inclined to think, with every one who had seen it, that the injection had failed, and that there was a fresh accumulation of water. Accordingly it was agreed that the operation by the seton should be performed. Saturday, July 8th, he was brought into the theatre for that purpose; when, on examination, it appearing to Mr. Pott and all who were present that the size of the tumor was lessened, he was sent back to his ward. From that time the tumor continued

continued gradually to diminish till the testicle was plainly perceptible, surrounded by the thickened tunica vaginalis. July 18 I examined with attention, and found it not only perfectly free from any fresh accumulation of fluid, but the testicle less in size than when I first let out the water; and the patient being well in every respect, I discharged him.

On considering all these circumstances I conceived that, if the method succeeded so well in this case, in which, from the size of the tumor, the duration of it, and the thickness of the vaginal coat, I had despaired of effecting a cure, there was every thing to hope from it in more favourable and more recent ones, and that it was infinitely preferable in every respect to any other operation I had ever seen attempted for the cure of Hydroceles. No pain, no violent irritation, nor fever succeeded; a gentle inflammation

tion only took place, attended with a moderate tumefaction, just sufficient to produce an adhesion of the tunica vaginalis to the testis, without the tedious process of suppuration, which, in some degree, is always the consequence of any other operation.

## CASE II.

THE next case which occurred to me was in June 1787, in the person of a gentleman, who shewed me a Hydrocele which he said had gradually been increasing during several months. The integuments were remarkably thin, and in every respect it was the reverse of the case just described. He wished to have the radical cure performed, and it appeared a very good subject for an operation. As he was a man of excellent understanding, and had applied his thoughts to surgical cases, and more particularly to this which most

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materially



materially concerned himself, I described to him all the different operations which have been recommended for the cure of it, and pointed out what appeared to me their advantages and disadvantages, that he might form some judgment, and choose which he would submit to. He decided in favour of injection. After having evacuated about five ounces of yellowish fluid the testis felt larger than natural, but soft; I then threw in some injection more diluted than in the preceding case. He complained of some pain, on which account, after the injection had continued one minute, I suffered it to be discharged, and the pain soon ceased; when, lest I should not have done quite enough, I attempted to throw in some more, but air had got into the syringe, and I was rather foiled; however some went in, on which he again complained of pain, and I again discharged it; and withdrew the cannula.

nula. He continued to feel a small degree of uneasiness, and went to bed. I saw him again in the evening, when he told me the pain had gradually subsided, and that he was then perfectly easy. I ordered a fomentation and poultice to the part, and an opening draught. The next morning a very gentle inflammation had taken place, the parts were moderately tumefied, and he felt very little uneasiness. The third day, being much the same, he chose to get up; the fourth day, encouraged by ease and favourable accompaniments, he very imprudently exerted himself in moving a heavy table, by which he brought on his pain again, and the scrotum looked larger and more inflamed. This fresh access was fortunately soon calmed, and the parts again gradually subsided; and, though he continued to sit up, in nine days from the operation the gland bore to be examined as well as a sound testicle. In a few days after,

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the inflammation was entirely gone; and, what appeared a circumstance very much in favour of this operation, as it is contrary to what happens after, I believe I may say, every other operation for this complaint, the testicle was become perceptibly, to the patient as well as to myself, smaller than when I let out the water. Every one must allow that, after operations by which a solid foreign body is suffered to remain within the tunica vaginalis, the testis for a long time remains enlarged, owing to the great and unnecessary quantity of inflammation excited, and to the duration of it. A fluid may undoubtedly be made so powerful, and retained so long, as to produce the same ill effects; I must therefore observe that the success of the method which I am describing will probably be found to depend on two circumstances; the mildness of the injection, and the very short space of time which



which I have proved to be sufficient for its retention.

Finding himself perfectly well, he went to his country-house, where he caught cold, by remaining in his garden after rain, and had a very severe attack of fever; but notwithstanding, the testis continued perfectly quiet and easy. May 20th, in the following year, I had an opportunity of seeing him again; when, on a careful examination of the parts, I was convinced that the testis was become of its natural size, that an adhesion had universally taken place between the tunics, and, in short, that the cure was complete. I have had many opportunities of seeing him since, and he remains perfectly well.

### CASE III.

NOVEMBER 23, 1787, a young man shewed me a swelling of the scrotum, of a few

H months

months duration, which I perceived to be a Hydrocele. After proper evacuations, I determined to attempt the cure by injection; I drew off a large tea-cup of straw-coloured water, and found the testis rather enlarged, as usual, but free from disease: I immediately filled the cavity with injection, which was kept in a couple of minutes; the patient complaining of some pain shooting up to his loins, it was discharged, and he went to bed. The next day I found him free from fever; he said, he had felt some pain similar to what he had felt during the operation; but the inflammation was not more than to be desired; the scrotum gently distended, with a scarlet blush. I ordered a poultice and bag-truss, and advised him, what I always recommend, not to suffer the scrotum to fall down between the thighs, but to support it by a small pillow, or by keeping the knees close. The 26th, the inflammation

inflammation was very moderate, he had no pain, nor had felt any since the second day; it continued gently to increase, and seemed about its height on the 28th, the fifth from the operation: and two days after, it appeared to be gradually decreasing; the patient during the whole time being entirely free from pain. December 4, the inflammation was diminished, the tumor about half its original size. On the 10th, the seventeenth from the operation, all inflammation had left it, the adhesion of the membranes appeared complete, and the testis in a perfectly quiet state.

#### CASE IV.

ON the same day that I injected the last mentioned Hydrocele, another case, exactly similar in every respect, was put under my care; the age of the man nearly equal; his

H 2                      constitution,



constitution, the duration and size of his complaint, as nearly resembling the other as possible. To give a fair trial to both methods, I passed a seton in this; the complaint proceeded very well, with moderate inflammation: the seton was gradually removed, thread by thread, as they became loose; in about ten days the scrotum began to lessen and collapse; a small abscess however was formed, the matter of which emptied itself by the lower orifice. On the whole, this case gave as little trouble, and ended as happily as the mode of treating it generally does. But I must most truly confess that it did not seem comparable to the other, in which the inflammation was more moderate, the duration of it less, and no abscess was formed.

## CASE V.

MARCH 12, 1788, in company with the late Mr. PITTS, I let out the water from the Hydrocele of an elderly man, which had been tapped about five years before. It appeared large before the operation; but the quantity of water which was evacuated, and which measured considerably more than a pint, proved the cavity to have been more capacious than we had apprehended. The testicle was in a sound state, very little larger than natural; I threw in some injection, the patient felt no pain, and scarcely any extraordinary sensation, which induced me to use the remainder of the injection of a stronger quality, and to keep it in longer than usual. I had not enough to fill the cavity; however, by handling and altering the position of the parts, I caused it to be diffused over the whole cavity:

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and,

and, as I have observed, it is the chief excellence of this method, that we are enabled to irritate and affect every part equally, but moderately. From the capacity of the cavity, and the consequent improbability of the parts lying in contact with each other, after having been so largely distended for such a length of time, I formed a very unfavourable prognostic of the event. I saw him next morning; he said he had perceived a slight pain in the afternoon, for about two hours, since which he had been easy: a small degree of inflammation and tumefaction had taken possession of the part. The 14th, the second day after the operation, they were moderately increased; I began, from the appearances, to have hopes of success, as the inflammation was just as I wished: the 15th, appearances were similar to those of the day before: the 17th, the inflammation continued moderate and unattended with pain: the 20th, the  
eighth



eighth from the operation, the inflammation and tumefaction were less, and continued gradually subsiding; he was soon after discharged well. I have had many opportunities of seeing him since, and he remains perfectly so.

As I have mentioned in the last case, that I threw up the injection stronger than usual, I will take this opportunity to observe, that I have commonly used about two thirds of wine to one third of water; if the parts appeared insensible, and no pain at all was produced by the first quantity thrown in, I have withdrawn the syringe, and added to the proportion of wine; on the contrary, if the complaint was recent, and the parts irritable, I have increased the proportion of water, so that I have hitherto been principally guided by the degree of sensation which the patient has expressed. I have lately used pure water mixed with wine, and found it

answer as well as when astringents were added.

The instrument which I commonly use, is a pipe with a stop cock, which is made to fit into the cannula of a trochar, and to receive the beak of a syringe of a moderate size, which may be applied and removed at pleasure. I have sometimes used the vegetable bottle; but it has this inconvenience, that if it be not perfectly filled with the injection, it will, by its elastic power, draw in a quantity of air, which may prove very embarrassing in the operation.

#### CASE VI.

THE next case which came under my care was a Hydrocele in the person of a middle aged man. As I was in search after a safe and easy method of curing this complaint,

plaint, I was pleased to find an external application strongly recommended as capable of discussing and curing it, by a gentleman of whose judgment and humanity I have the highest opinion. Although I had succeeded so well by injection, an external wash being more easily applicable, I was induced to give it a fair trial. May 5, the tumor was wrapped in cloths, wet with a solution of sal amoniac in acet. et spt. vin. After using it two days the patient complained so much of inflammation and irritation, attended with darting pains in the scrotum, that I was obliged to omit it for a day or two; after which time he used it lowered with a little water. May 27, after having continued this application nineteen days, I could find no sensible difference in the size or appearance of the tumor, except that the skin was corrugated and inflamed from the irritation of the application. May 30, no sensible alteration; he



he continued to use it, with now and then a small interval, till the 22d of June, when, tired at finding no benefit, he would not submit to any other operation, as was proposed to him, but chose to leave the hospital.

#### CASE VII.

AN intelligent gentleman, who had been in the medical line in India, shewed me a Hydrocele on each side; we talked over all the usual modes of curing the complaint; but he did not seem satisfied with either of them. I mentioned the solution of the sal amon. and recommended him to give it a fair trial. He accordingly applied it, as it is directed; but, as it happened in the instance just mentioned, it produced so much inflammation, that he was obliged to desist. He afterwards used it for near three months,

months, at the end of which period, May 31, 1789, he again shewed me the tumors; but there was no perceptible diminution in their size.

#### CASE VIII.

NOVEMBER 5, 1788, I took a young man under my care, who had apparently a Hydrocele; but it was one of those cases of which, on account of the tightness with which the coats enveloped the water, and from the thickness of the scrotum, we could not positively at once determine the nature: however, as I concluded it to be a Hydrocele, and, from its recent appearance, a favourable case, I immediately began to treat it with an external application of a solution of sal amon. but after seventeen days, finding no kind of advantage, and the man being impatient and anxious to return to his friends,

I deter-

I determined to use the injection. November 22, I let out about five ounces of clear fluid, found the testis in a good state, though enlarged, which, as I observed, is frequently, I might say generally, the case. I then filled the cavity with injection, in the presence of a number of gentlemen, and kept it in a few minutes; he complained of so little pain that I was apprehensive, and I believe all who were present concluded, that what I had done was to no purpose; that is, that there would not be sufficient irritation to produce the necessary inflammation. He continued without pain the whole of that day and the next; the third day he was perfectly easy, but a gentle inflammation had taken possession of the whole scrotum, equally in every part: the 5th day the inflammation continued as before, and the swelling was so free from pain, that it had strongly the appearance of a fresh collection of fluid; but, as this deception



ception had several times occurred to me before, I did not the less expect a cure. On the seventh day from the operation the appearances were very similar, the man void of pain, the scrotum gently tumefied, from which time the scrotum began to corrugate, and the tumor gradually to decrease, till in less than three weeks it became of the size of the testicle, when the water was let out. I kept him in the house till the 21st of December, to observe if any fresh accumulation took place, when, being perfectly well, he was discharged.

#### CASE IX.

A gentleman was introduced to me by Dr. Grieve, with a Hydrocele which had been treated with the same discutient, and which he had found so painful that his surgeon was obliged to lower it; it was continued, as

strong as he could bear, during five weeks, when the water, not being lessened, was let out, after which the application was again made use of during the evacuated state of the complaint; but it had not prevented the re-accumulation of the water.

It would certainly be a most desirable plan, to get rid of the disease without any operation; but we know too well how confined our powers are in dispersing collections of fluids within *sacculi mucosi*, and some kinds of encysted tumors, whose integuments are comparatively thin, and therefore must conceive, that much greater power would be requisite to act through the *scrotum* and thickened *tunica vaginalis*, so as to produce absorption of the fluid and cohesion of the tunics.

Hydroceles have been accidentally dispersed by various means, particularly by a blow, by a fever, and by sickness at sea. I do

not entertain the smallest doubt, that the above remedy, which has been proposed by an ingenious and able practitioner, has produced the same effect; but I cannot help doubting its capability of frequently producing it, from these and many other instances I have been witness to, and have been informed of, in which it has been equally unsuccessful.

The above gentleman, some time after, put himself under my care; I let out a moderate quantity of fluid, and threw in some injection. The inflammation which was produced in this case was so moderate that he would not submit to be confined; but in two or three days after the operation, notwithstanding the testis was evidently inflamed and larger than natural, went out and took his usual exercise. This brought on so much swelling as made him content to stay at home a fortnight, during which time it increased  
in



in size, and gradually lessened; but at no time was at all painful, unless it was handled. Though, from the little attention paid to it at first, the tumefaction in this case had been rather obstinate, it was, in about three weeks, so nearly subsided, that he went out of town, with every appearance of the accomplishment of a perfect cure. I have seen him many times since, and there is no appearance of his ever having had a Hydrocele.

#### CASE X.

MR. PITTS evacuated a large Hydrocele of a middle aged man; the testicle was found larger and harder than usual; he permitted me to throw in an injection, which, on account of the size and thickness of the parts, I had made rather stronger than usual; there was not quite enough to fill it, but I pressed it so as to make it find its way over  
the

the whole cavity, and suffered it to remain in six minutes. I did not see him again till the fifth day; the scrotum was considerably inflamed, and tender to the touch. I directed him to remain in bed, and to apply a poultice made with extr. saturn. the next day the inflammation was lessened, and he was free from pain, and the tumor began to subside. There is so great similarity in the progress of these cases, that I have only to say the inflammation continued gradually to lessen, and in less than a month the testis was of its natural size, and the man was discharged. He has since been in the hospital for another complaint, and we have had opportunities of examining the part; the adhesion appears to have universally taken place, and consequently there is not the least vestige of the Hydrocele.

## C A S E X I.

FEBRUARY 7, 1789, I emptied the Hydrocele of a young man, let out a moderate size tea-cup of fluid, threw in the same quantity of injection, and kept it in three minutes; the patient complained of some pain shooting toward his back: the 9th he had no pain; the inflammation very moderate: the 10th no great alteration; but I observed, what indeed I had often before remarked, that the scrotum appeared distended, as if again filling with water. The inflammation continued to proceed moderately, and gradually to subside. The patient was so free from pain and every complaint, that he chose to leave the house in less than three weeks; and, indeed, before the swelling was quite gone, to follow his occupation of a tide-waiter. I have since had many opportunities of seeing him and examining the part; the  
adhesion



adhesion appears perfect, and the disease completely cured.

## CASE XII.

MARCH 6th, 1789, I went with Mr. R. Croft to see a young man who had a Hydrocele on each side. Mr. Croft had once performed the palliative cure on the left, which was now filled again, and was much larger than the other. I let out a large quantity of fluid, and found the testis in a good state, though larger than natural. I introduced sufficient injection to distend the bag, and kept it in four minutes; the man complained of some pain when it was first thrown in, but was perfectly easy before the four minutes were expired. I then proceeded to evacuate the other; but, as the quantity of water was small, and I could not safely introduce the instrument which I generally use for the purpose of injecting, I contented myself

with emptying it by means of a small trochar, and found the testis large in proportion to the size of the tumor; I withdrew the cannula, and left it to take the chance of what might follow from partaking of the neighbouring inflammation which I expected to take place. Mr. Croft saw him the next day, and gave me an account that he had risen, and was walking about the room, and that the parts were beginning to swell. As this was greater liberty than I had yet given, I begged he might immediately go to bed, and have a poultice applied. I visited him next day, and found more inflammation than I had ever seen after this operation; and, what appeared extraordinary and fortunate, the side which had not been injected was almost as much inflamed as the other; but he complained not of the smallest pain in either. The 14th, I saw him again; he continued free from pain, and the inflammation was

very much abated. The side which had not been injected appeared less likely to diminish than the other; and the apparent feel of fluid which I observed often follows, was more than usually perceptible. On the 20th, a fortnight from the operation, the side on which the injection had been used was perfectly well; in the other the water was evidently collecting very fast; which demonstrates how little effect external inflammation can have when it is to act through the scrotum and tunica vaginalis, and points out the greater certainty which follows the application of the stimulus to the inside of the cavity: in this case, notwithstanding the water was evacuated, and a much more considerable inflammation was raised on the scrotum than could have been caused by almost any external application, no internal effect was produced. I took leave of him, recommending him to do nothing farther till



it was sufficiently full to be treated in the same manner.

### CASE XIII.

MR. CROFT continued to see him from time to time, and gave me an account that the side which had been injected, remained perfectly well; but that the other was large, and he wished me to perform the same operation on it. May the 2d, I examined it, and found the left side perfectly well, and free from water; the right distended, but not very large. I plainly discovered, through the water, that the testis was larger than it ought to be; and it was not without great care, that I was able to pass in the trochar without injuring it. I let out about five ounces of fluid, filled it with injection, and treated it in every respect like the other. I saw him two days after; he said he had passed a restless night, and the part was more inflamed and

and tumefied than usual; on inquiry, I found he had eaten a dinner of roast beef and drank porter. After taking a little opening medicine, and using a lower regimen, in two days the tumor was less, and the inflammation more moderate. In about the usual time he got well; and, I have been informed, he continues perfectly free from any complaint on either side.

#### CASE XIV.

MAY 16, 1789, I let out about five ounces of a straw-coloured fluid from the Hydrocele of a young man, and threw in an injection; he complained of pain during the first three minutes, when he grew easy: in five minutes the injection was discharged. This proceeded, in every respect, like those I have related, with a very moderate inflammation, which decreased gradually.

He has since applied to me, with a vene-

real swelling in both his testes; which, by means of mercurial frictions in the internal parts of his thighs, are both decreasing, but there is not the smallest sign of his ever having had water in either.

#### CASE XV.

IN the autumn of the same year a gentleman came from Barbadoes on purpose to be cured of a large Hydrocele. With his consent, I intended to use the method by injection; but, at the instant when I had passed in the trochar, with a violent involuntary motion of his body he forced it out with the cannula, by which accident a small quantity of water only followed through the external orifice, but a considerable portion escaped from the tunica vaginalis, and insinuated itself into the cellular membrane of the scrotum, making a large swelling, which put  
a total



a total stop to the intended operation. As his time was limited, and he was anxious to return, he pressed me to perform immediately the operation by incision, or by any other method; however, I persuaded him to wait a fortnight, by which time the extravasated fluid was nearly absorbed: but, as the quantity which remained in the tunica vaginalis was small, and consequently the cavity was become less capacious; and as he was so particularly circumstanced with regard to leaving this country, I did not choose to try the injection, but there being just sufficient room for the instrument to pass safely, I performed the operation by the seton.

This case terminated well, and the gentleman is returned perfectly cured; but it was attended in its progress with an abscess, the consequence of a much greater degree of inflammation than I have ever experienced from the use of injection, and indeed abundantly

abundantly more than was necessary for the cure.

The accident by which the instrument was forced out may serve as a caution, and point out the propriety of placing the patient against a table, or upon a couch, or in any situation in which it will not be in his power to recede.

#### CASE XVI.

ABOUT the same time I injected the Hydrocele of an Irish gentleman, aged 30. He felt little pain while the injection was in; the next day the inflammation was moderate, and proceeded in a gentle manner, with scarcely any variation from most of those cases in which I had used injection, and whose progress I have described; it is therefore unnecessary to take up more of the reader's time in particularizing the symptoms.

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The foregoing cases were published in my last treatise on this subject, but, for the reasons before mentioned, I have been induced to reprint them, and add others which have since occurred.

#### CASE XVII.

MARCH 9, 1790, a gentleman from Nottinghamshire applied to me with a Hydrocele on the left side; some few years before he had been troubled with the same complaint on the other, which had been cured by Mr. Pott by the seton, and continued perfectly well. I mentioned to him the method which I had adopted, and he agreed to give it a trial. Assisted by Mr. Long, I emptied the bag, which was not large, and filled it with injection, which was retained about the usual time;



time; he complained of little pain either during the operation or afterwards; the inflammation increased gradually, and so diminished; in a week after the operation he was permitted to walk, and in three weeks he was well enough to return into the country. In December 1790, I received an account from himself assuring me of his perfect recovery. As he had undergone the two different methods of cure, he was a competent judge with regard to pain and inconvenience attending both, and I make no scruple in asserting that he warmly declared his preference to the injection.

#### CASE XVIII.

THE Rev. Mr. ——— shewed me a very large Hydrocele, which he desired me to cure by injection. April 15, 1790, having drawn off a large quantity of water, I refilled it with  
injection

injection of moderate strength, and retained it seven minutes, during which time he felt little pain; in the afternoon had a slight attack of pain; next day was perfectly easy, though there had arisen a sufficient inflammation, which increased gently, and gradually subsided, without pain or inconvenience. On the 4th of May he was well enough to go to his living in Huntingdonshire.

In November the same year, he did me the favour to call in Hanover-square, and permitted me to examine the part; it appeared so perfectly well, that, had it not been for a tuck in the skin where the water had formerly been let out by a lancet, and an adhesion had taken place between the scrotum and tunica vaginalis, it would have been difficult to have distinguished the side where the disease had been from the other.

## C A S E XIX.

I saw Captain — with an uncommonly large and much distended Hydrocele, which, from having been continually pressed on by a suspensory, and tight breeches, had a remarkably broad basis, which reached from high up on one groin across the scrotum to the other thigh; I observed a large scar or cicatrix almost the whole length of it: the account he gave me of it was, that about a year and a quarter before, the operation of incision had been performed on it in Ireland; that so soon as the wound was healed, the water began to collect again; that he had suffered so severely by the operation, and by the subsequent treatment, that he was determined to ask no further advice on it, till, having been so long accumulating, it was from its size become intolerable: it was indeed so large, and the tunic so much thickened, that I objected



jected to performing any but the palliative operation, and recommended him to put off the attempt to cure it radically till it should fill again, and become of a more moderate size: however, as it would have been very inconvenient to him to come back again from Ireland, and as the injection could do no harm, if it did not succeed, I was induced to risk the credit of it; accordingly I emptied the bag, and threw in a very large quantity of the injection. He complained of a good deal of pain during the greatest part of the time it remained in, which was about seven minutes; considerable inflammation succeeded, and next day it appeared nearly as large as before it was let out, but he was quite free from pain: it continued inflamed and swelled for several days, when it gradually lessened; at the end of a fortnight it was nearly subsided, and he was permitted to walk about the room: on the 6th of May  
 he

he went to his friend's house at Hampstead; the 7th I saw him; there appeared no more swelling than was caused by the still prodigiously large and thickened tunica vaginalis which had contained so much fluid, but there was no sign of any fresh accumulation: he had not the smallest pain, and took his exercise as usual. I saw him some time after, and the whole tumor was considerably lessened: he is since returned to Ireland; but, from his friends who reside in London, I have continual opportunities of knowing that he remains perfectly free from any return of his complaint. This case is more in favour of injection than any I have seen, as, from the great distention and size of it, there was the greatest improbability of the parts being brought sufficiently into contact to bring about an universal cohesion.

## C A S E XX.

MAY 4, 1790, I injected the Hydrocele of a patient of Mr. Pitts, which was large, but the sac thin; he complained of some pain during the operation, which ceased before the injection was withdrawn; next day he was perfectly easy; a gentle inflammation took place, which proceeded in every respect as usual. I have seen him since, and he continues perfectly well.

## C A S E XXI.

THE following case may prove an useful caution to future operators. A gentleman attempted to perform the operation of injecting a Hydrocele; but after he had passed the trochar and evacuated the water, before he had his apparatus and injection ready, by some accident the cannula

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slipped



slipped out of the sac of the Hydrocele ; when he attempted to throw in the wine it met with resistance, notwithstanding which he forced it in, till finding the whole scrotum on both sides uniformly increased in bulk, he began to suspect that he was not filling the cavity of the tunica vaginalis, on which he attempted to evacuate it, and get rid of what he had thrown in, but it was impossible. The injection having diffused itself among the cellular membrane under the scrotum, he was obliged to leave it there; in consequence of which violent inflammation, and a mortification and slough of the scrotum, followed, and left the testes bare; the patient however recovered,

I have been informed of another case, in which some portion of the injection was suffered to be diffused in the cellular membrane under the skin, which formed some small abscesses. If the operation be rightly performed

performed this can never happen ; or if by chance the cannula should slip out of the tunic, the completion of the operation *pro hac vice* should be suspended.

### CASE XXII.

SEPTEMBER 1790, a gentleman of the profession from Barbadoes applied to me ; he said he had had a Hydrocele on the right side, which, after having tried to cure by the sal ammon. both in the full and empty state, in vain, had been cured by the seton, the marks of which were visible by the tucking in of the skin where the seton had passed. It remained perfectly well ; but he now laboured under the same complaint on the left. I let out the water, which was in small quantity, as the testis itself was very large and occupied the greatest part of the tumor, yet did not appear so hard or so diseased as to forbid an

attempt to cure the Hydrocele. I filled the cavity with injection, which gave little pain; sufficient inflammation succeeded, which gradually subsided: in less than a fortnight he was perfectly well, and went out about his business as usual; he assured me he found the injection an incomparably easier mode than the seton.

#### CASE XXIII.

OCTOBER 1790, a gentleman shewed me a Hydrocele of moderate size, which he had been endeavouring to discuss with the solution of sal ammoniac, and had tried it to the full extent of its powers; but, though it had raised great inflammation on the scrotum, had produced no effect in lessening the tumor. In the presence of Dr. Hallifax and Mr. Serjeant Hawkins, I drew off its contents, which were not remarkable in quantity or quality.

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The patient appeared to be of a very irritable habit, complained of pain in his testis before the water was discharged, and his pain increased when the bag was empty; I threw in an injection of moderate strength, from which he also expressed more than usual pain while it was retained, and after it was discharged; this was much augmented by being obliged to go up stairs to his bed. Though the sensation which he expressed was very uncommon, it may serve as a caution against performing the operation out of the bed room; when in bed he continued to complain, yet not of the testis, but of an aching in his back and kidneys, to which, however, he said he had been much subject: he took a gentle anodyne, and the pain subsided in about an hour and a half, after which he grew easy, and so continued all day. The next day there was some tension on the part, but the patient was perfectly easy; in the afternoon he got

up and lay on a couch, and two days after went into the next room. The inflammation and tension increased gradually, and seemed at the height about the seventh day, after which it lessened; he was now only sensible of weight in the part. The tenth day he went down stairs, walked about, and sat on his couch; indeed, being of a lively and active disposition, he was not so attentive to keep in a quiet posture as I could have wished; however no accident to the part, nor impediment to its diminution, occurred; it gradually subsided, which, about the fourteenth, I hastened by a more powerful antiphlogistic application; soon after which time he went out in his carriage. November 12, three weeks from the operation, I examined the part; there was no inflammation remaining; it was free from fluid, and no bigger than what was produced by the large and thickened tunic wrapping round the testicle.

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I have repeatedly heard from this gentleman since, and he remains perfectly well.

On the same day, 5th of October, I performed the palliative cure on the Hydrocele of a young gentleman, and the only reason for my noticing it is, that on examining it the 14th, nine days from the operation, there was an evident fluctuation of re-accumulated fluid, which is a proof that it is not necessary to wait long before we may be convinced of the cure, or the return of the complaint, though the contrary doctrine has been advanced.

#### CASE XXIV.

NOVEMBER 13, 1790, I assisted Mr. Blicke, at St. Bartholomew's hospital, in letting out the water of a moderate sized Hydrocele of a young man which had been once before simply evacuated; it was now filled with

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injection,



injection, which was suffered to remain six minutes. The patient complained of some pain at first, but said he was easy before the injection was let out; after which, he walked without any uneasiness, or difficulty, to his ward. The 15th I saw him again; he had felt some pain for about an hour in the afternoon after the operation, and had been perfectly easy ever since; the whole scrotum appeared swollen and inflamed, but not painful. On the 20th it was subsiding, and it continued gradually to diminish.

December 1st I examined it; the testicle continued larger than the other, the coats probably not having had sufficient time to become thin; but there was not the smallest return of water.

CASE

## CASE XXV.

FEBRUARY 1791, a gentleman from India consulted me on account of a large Hydrocele which had been collecting more than three years, and for which he wished to obtain a radical cure. As it was of considerable magnitude, and had never been emptied, I advised him to content himself, for the present, with the palliative cure; I let out about twenty ounces of straw coloured water, and found the testis much enlarged and the tunics apparently much thickened; the water soon began again gradually to collect. I saw him now and then till May following, when it was full enough to be submitted to the radical cure, and the mode by injection was determined on. After having passed in the trochar, while the fluid was running out, by some accident, the sac contracted quicker than the scrotum, and  
let

let the cannula slip out. I was not able again to find the opening through which it had passed into the sac, though it was sufficiently open to permit part of the water to flow out of the sac, and insinuate itself into the cellular membrane of the scrotum; I therefore immediately desisted from the intention of completing the operation at that time. Though the quantity of extravasated fluid was considerable, it was attended with little inconvenience, and was soon absorbed: the Hydrocele filled again as usual; and in June following, it not being then convenient to him to undergo a radical cure, I again let out about the same quantity as it first contained.

About the same time a gentleman called on me from Oxfordshire, with a large swelling in the scrotum: the account which he gave me was, that the origin of it he could not account for, but that it had been gradually

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ally increafing for a great length of time, till about a twelvemonth preceding it was very large, and while it was in that ftate he had the misfortune of a fevere fall from his horfe; when he got home he perceived the whole fcrotum enlarged, and the part where was the original fwelling, fmaller and fofter; the fkin was black from the bruife, but the whole of the fwelling gradually went away, and he concluded he had got rid of his Hydrocele. However, he foon found that he was miftaken, as it foon began to be again diftended, and in fix months was as large as before. Notwithftanding the failure of fuccefs from it being thus burft, he was determined to try a fimilar operation, and therefore imprudently ftruck it with violence againft a table; the fame confequences followed as were produced by the fall, the fac was burft, the fluid found its way into the cellular membrane, and was, as before, gradually re-abforbed; and he again

found himself disappointed of a cure, as the Hydrocele again began to collect, and in six months more was as large as ever. He did not choose to push his own experiments further, but came to London to consult me, and wished me to perform the radical cure. It now appeared large, and much distended; but, as it was impossible to say what mischief had been done to the testicle by the violence which had been offered to it, and consequently I could not determine whether it was in a fit state to bear the necessary inflammation, I recommended the simple puncture to be first tried. On passing the trochar I was not surprised to find the fluid very deeply tinged with blood; the testis however did not appear to be much injured, though larger than natural. When he left me it was his intention to return to town as soon as it should again be filled.

I have mentioned these two instances in

confirmation of what I before advanced, that it is not necessary in these cases of extravasation to perform the incision, or any other operation, only to wait with patience, and Nature will do her own work of absorption, which indeed may be promoted by the usual discutient applications.

#### CASE XXVI.

JANUARY 1791, Mr. — shewed me a large tumor in the scrotum; he said he had perceived a small swelling in the part some years; that it had been long stationary as to size, and soft; and he always imagined it to be air. This was, probably, one of those kinds of Hydrocele which do not increase without a fresh cause, of which I have seen some instances. He had lately been thrown from his horse, and had bruised it greatly; when he was recovered from the external  
bruises



bruises he found the scrotum much enlarged and distended. I represented to him that it was filled with fluid, that probably the testis had been bruised, and that what before had been a simple Hydrocele, was now increased by an addition of blood. He wished the radical cure to be performed, but I recommended the simple puncture to be first tried, as it was not clear how far the testicle was concerned in the swelling: this was performed with caution, and with the point of a lancet. As I expected, a fluid immediately rushed out, of which blood appeared to constitute much the major part. As the nature of the case was now clear, which was all the information we wanted, and as the fluid did not freely follow through the small puncture, the orifice was closed and suffered to heal. March 6, 1791, it appeared again very full and turgid. As he now chose to have the radical cure performed, I passed in a trochar, and

and let out about three parts of a pint of pellucid straw-coloured water. Here I must remark a fact which perhaps is difficult to be accounted for; the fluid which was left in the sac in January, was evidently composed of blood and water; from that time it continued to fill again, and when it was now let out it was perfectly free from blood, so that the absorbents, on the surface of the membranes, appeared, in this case, to have had the power of separating the red globules from the aqueous particles, and absorbing them; at the same time the water, so far from diminishing, was increased.

I threw in some injection, and he complained of little pain; he continued with scarcely any uneasiness all the day, but in the night was seized with a gouty cholic, to which he was much subject, and which he thought he had now brought on by abstinence, which he had observed some days  
previous

previous to the operation; this gave him a restless night, but he did not feel pain in the part. The next day he was well of this attack, and the part looked well, with rather more inflammation than usual, probably owing to the restlessness of the night, which made me keep him in bed longer than ordinary; however, the sixth day from the operation both swelling and inflammation were gradually subsiding, and on the fourteenth all inflammation and tenderness were wholly dissipated; the seventeenth he went out in a carriage, free from any pain or inconvenience; the complaint was completely got rid of, and he remains perfectly well.

#### CASE XXVII.

APRIL 26, 1791, I was desired by Mr. Long to use the injection in a Hydrocele of a middle aged man; the person said, several months



months before, he had overstrained himself in mowing, and had felt a violent pain, which he described to have been in the spermatic chord, reaching up to the loins; that the chord swelled and inflamed, and afterwards, as that subsided, the Hydrocele began to collect below. I had seen the complaint in consultation some months before, when, though it was distended uncommonly high into the ring, we had concluded it to be a Hydrocele, and Mr. Long let it out by a puncture. Immediately after the operation a violent and very unusual pain, with subsequent inflammation, attacked the chord, which continued in a considerable degree, but did not, as was expected, produce a cure; the water again began to accumulate, and on that taking place the inflammatory symptoms seemed to subside. These unusual complaints shewed something peculiar in the case, or an uncommonly irritable habit; but as the Hydrocele was

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again

again filled, I saw no objection to performing the operation for the radical cure. When I had punctured the bag, and was drawing off the water, in which there was nothing remarkable, he complained of great pain shooting up towards the kidneys on that side; on throwing in the injection he also complained more than common, but when the bag was completely filled, the pain subsided, and the injection was retained the usual time. The next day the part was more tumefied, and the chord more affected than generally happens, his pulse moderate, with no feverish symptoms; the following day he was somewhat better. The 3d of May, seven days from the operation, the tumor was much lessened, he felt no pain, and the scrotum was beginning to corrugate. I saw him again on the 9th of May, when he was able to walk and take his usual exercise. In about three weeks from the operation he was well, and

returned into the country perfectly cured of his Hydrocele.

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It was my original intention to have confined my observations in this treatise to the Hydrocele of the tunica vaginalis testis, which most commonly requires our assistance, and on which alone I had tried the effect of injection; but a particular case having occurred since the preceding papers were written, and having been submitted to this mode of cure, requires to be noticed; and as it materially differs from those I have hitherto described, one species being a distention of a natural cavity, the other of a cavity produced by the disease, some previous account of it becomes necessary.

The HYDROCELE of the SPERMATIC CHORD has been divided into two kinds, one of which is an extravasation of lymph, dif-



fused through the cellular substance of the spermatic vessels, and is called the Hydrocele of the cells of the tunica communis.

When this disease is simple it is perfectly local, that is, it is confined entirely to the membrane forming the tunica communis, and does not at all affect either the dartos, the tunica vaginalis, or any other part: while it is small it gives little trouble, and often passes for a varix of the spermatic chord; sometimes it arises to so large a size, and gets into such a state as to become an object of surgery.

If the extravasation be confined to what is called the spermatic process, the opening in the tendon of the abdominal muscle is not at all dilated, and the process passing through it may be distinctly felt; but if the cellular membrane which invests the spermatic vessels within the abdomen be affected, the tendinous aperture is enlarged, and the increased size of the distended membrane passing through it, produces

produces to the touch a sensation not very unlike an omental rupture.

As it is not probable that this complaint can be cured by the ordinary methods of treating the common Hydrocele, it is not properly the subject of our present enquiry. Mr. Pott has mentioned the incision as the only method of cure which it admits, and which, he observes, is far from being void of hazard,

The other species of the disease has been called the ENCYSTED HYDROCELE of the TUNICA COMMUNIS,

This, like the preceding complaint, has its seat in the tunica communis, or cellular membrane which invests the spermatic chord, with this difference, that in the former the fluid is diffused through the cells of the membrane; in this it is collected in one cavity or bag, which is formed, as the coats of encysted tumors usually are, by pressure and

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condensation of the common membrane. It most frequently possesses the middle of the spermatic process between the testicle and groin. Like the common Hydrocele, its growth is gradual, and when of the size of the testicle, forms with it the outline of the figure of 8, beyond which period it varies in size and form, being sometimes oblong, though commonly continuing globular; whether it be large or small it is generally pretty tense, and the fluctuation of the water not easily perceptible. When lightly struck on with the finger it gives the sensation of a bladder distended with air, and has been mistaken for a species of pneumatocele, or wind rupture, a disease which does not exist; it gives no pain, nor unless it be very large, does it hinder any necessary action. It is perfectly circumscribed, and has no connection with the cavity of the tunica vaginalis below, or the abdomen above. The testicle  
with



with its epididymis may be distinctly felt below the tumor, and are absolutely independent of it; and the upper part of the spermatic chord may generally be distinguished above it: it undergoes no alteration from change of the patient's posture, and is not affected by the action of the abdominal muscles in coughing, sneezing, &c.

These marks sufficiently describe the complaint, while it is simple and uncombined with any other; but when it is accompanied with a hernia, or a Hydrocele of the tunica vaginalis, it becomes more complex, and when the pressure from above or below is considerable, the nature of it sometimes cannot be precisely determined till the other complaints are removed; that is, till the contents of the abdomen are returned into their proper cavity, or the tunica vaginalis is emptied.

These are the diseases for which it is

most liable to be mistaken; but, as was observed, it is easy to be distinguished from the Hydrocele of the tunica vaginalis by the testicle being perceptible in its natural state below it; it sometimes indeed presses so high upward as to make it impossible to feel the spermatic chord above it, which gives the appearance of a descent from the abdomen: however, absence from every symptom of confinement of the intestinal canal, and the distinguishing symptoms and marks which were noticed when we were considering the Hydrocele of the tunica vaginalis, in the same situation, will be sufficient to point out the true nature of this disease. Some have proposed to cure this complaint by the application of a caustic, but I should conceive there would be great danger of its penetrating too deep, and injuring the spermatic vessels. A division through its whole length is the only method which Mr. Pott has proposed: but  
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he observes, that though the operation may in general be performed with great ease and perfect safety, he has seen it prove troublesome, hazardous, and fatal. Of such consequence are wounds in membranous parts in some particular habits. Mr. Pott, with his usual candour, has related two cases of the encysted Hydrocele of the chord on which he performed the operation of incision; the first was laid open through its whole length, and a perfect cure was obtained: the other was in the same manner divided, but did not end so fortunately; the patient, though at the time of the operation apparently healthy, proved of an ill conditioned habit of body; the wound neither became tumid nor inflamed, his pulse hard and frequent, accompanied with thirst, restlessness, and a languor in his countenance. On the fourth day the incision still remained cold, lax, and flabby; and was so far from shewing any tendency to  
suppurate,



suppurate, that, on the contrary, the edges began to look livid, and, notwithstanding every medical assistance, he died on the seventh day.

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### CASE XXVIII.

THE case which I am to relate was of a person from Feverham, about fifty-four years of age. On examination there appeared a tumor in the spermatic chord, about the size of a moderate orange, hard and incompressible; he imagined it proceeded from a blow, and had perceived it a considerable time growing larger, without causing much pain; but it was now becoming more and more uneasy, from the distention of the increasing fluid.

Below this fulness the testis with its epididymis was perfectly distinct, neither enlarged, nor in any manner altered, and the termina-  
tion

tion of the tumor above was perfectly free from any connection with the contents of the abdomen; the chord between it and the ring being to be felt in its natural state, though somewhat larger than usual. I made no doubt of the disease being an encysted Hydrocele of the spermatic chord.

The patient pressed me to make a permanent cure of his complaint, as he said his business was on board a ship, and the swelling was a great inconvenience to him.

Though I conceived the operation of incision might be performed in this case with less risk of violent symptoms than when the tunica albuginea is uncovered, as in the common Hydrocele, still I felt a repugnance to laying it open by a division of such membranous parts, and was inclined to try the effect of injection.

As the extreme sensibility of the tunics of the testicle had always appeared to me the  
cause

cause why so mild an injection as I usually employ in the common Hydrocele, is found to be sufficiently stimulating to produce the proper effect, I had much doubt whether in this case, in which it would not meet with such irritable surfaces, it would be powerful enough to raise the necessary inflammation: however, as the worst that could have happened would have been disappointment, I determined to try it of the usual strength. March 22, 1791, the trochar was passed through a very thick cyst, and let out a quantity of straw-coloured fluid, similar to what is usually found in the common Hydrocele; on the cavity being filled with injection no pain nor sensation was excited, on which account it was suffered to remain in near half an hour, and was then discharged. The injection having been so perfectly innocent, I expected the effect from it to be proportionally small; but was pleased to find, next day,

some



some inflammation on the part, and the patient said he had felt some pain. From that time it proceeded in every respect like a Hydrocele of the tunica vaginalis, it gently swelled, and had the appearance of a fresh collection of fluid; in about a week it began to subside, and gradually decreased, till, in less than three weeks, it came to the size of a small walnut, and felt to be only the remaining solid thickness of the cyst; after which it seemed stationary, and no alteration appearing likely to take place, about the end of the month from the operation he went into the country.

I had an opportunity of seeing him the 10th of May following, and the part which had been the seat of the disease was become so nearly of the size of the rest of the chord, that the difference was scarcely perceptible. This is an additional instance of membranous parts growing thick from pressure, and again becoming

becoming thin, and of their natural texture, from the absence of it.

The success of the vinous injection, in this and other cases where I have tried it, particularly in a large ganglion, and a collection of glair on the patella, makes it probable that it will be found extensively useful in all cavities where we wish to procure an adhesion without destruction of parts.

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WE have now considered all the methods which have been usually employed for the cure of this complaint, and I have endeavoured, with fairness and impartiality, to state the respective advantages and inconveniences attending them. The proportional merit however of different remedies can never be exactly determined; few men have opportunities of seeing a variety of remedies repeatedly tried, and perhaps still fewer possess a sufficient

cient share of candour to weigh the merits and defects of each in an equal balance; consequently medical practice is never settled in any case till it be nearly perfect, or, at least, till some one proposed remedy bears no comparison in point of excellence with the rest.

Thus far however I think we may fairly gather from what has been related, that there are some so painful in the execution, and dangerous in their consequences, that they ought to be laid aside. Such appears to me the opening the sac of the Hydrocele, and laying bare the testicle, whether it be done with the knife or caustic; for although the operation of INCISION may have been improved by the ingenuity of some among the moderns, and the whole of the subsequent treatment rendered less violent than former methods, yet, as far as my opinion goes, the practice is still severe, unnecessary, and therefore wrong.

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The TENT, after having been practised for two hundred years, has been so little used of late that we have scarcely sufficient data to judge of its effects and consequences; the instances which I have quoted are certainly not in its favour. On the whole, I should conceive it would have the principal inconvenience of the seton, that of being a solid body, without an equal extent of service. As the operation of it must necessarily be more confined, and touch a smaller surface, the inflammation which should follow would be less likely to be spread over the whole cavity of the tunica vaginalis than that induced by the seton, which passes through the whole of it; and when the Tent is introduced from an opening in the upper part it must be highly dangerous.

There remain the excision, the application of the small caustic, the seton, and injections.

The

The **EXCISION** may possibly be necessary in some old cases, where the coats, from long and repeated distention, are become thick and rigid: such, however, very rarely happen; nor can it be necessary in these until the milder methods have been tried and have failed.

With regard to the **SMALL CAUSTIC** and **SETON**, they have each so many advocates, that I am far from determining which deserves the preference: but for the reasons given, and which I repeat, the caustic being designed to destroy, and cause to slough away a portion of the scrotum, and the whole of the tunica vaginalis, which produces a painful and offensive ulcer; on the contrary, the object of the seton being to preserve, as much as possible, the natural and perfect state of all the parts, I am inclined to give my vote in favour of the latter.

They are both certainly great improve-

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ments,

ments, in comparison of all the preceding operations ; yet, as there are objections to be made to both, I shall esteem myself fortunate, if I am the means of introducing into this country a method, which is not liable to the inconveniences attending either of them ; and I flatter myself I have related sufficient instances to prove that the cure by INJECTION really deserves a preference.

There is one merit which I am confident the injection possesses in a very superior degree, that the inflammation which is excited by it is so gentle, that it may be safely used almost under any circumstances, and at any period of life ; and if it should not succeed, that is, if the inflammation should not be raised to a sufficient degree to effect the purpose of cohesion, it can do no harm, nor produce the smallest ill effect or inconvenience, provided it is properly performed. The same consequences alone would take place as usually



ally follow the mere letting it out by puncture. There would be a fresh accumulation of water, and we should not be prevented from another trial to cure it, by injection, by the seton, by caustic, or any other method, just as if no previous operation had been attempted.

F I N I S.



## APPENDIX.

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SINCE the publication of my Treatise on the Hydrocele many other instances have occurred in which the means of cure by injection have been employed—conceiving it to be a duty incumbent on every one, who advances an opinion which interests the health and ease of mankind, to bring forward every information respecting it, which experience produces, until its appropriate value be completely ascertained, I have thought proper to print the following cases.—As they are merely intended to exemplify and strengthen the arguments



guments which I have before fully stated, I shall proceed to relate them without further preface or apology.

### C A S E XXXI.

JUNE 26, 1791. A gentleman who had suffered much in his own person by the operation of incision for the cure of a Hydrocele, having been confined by it nearly six months, desired me to see his nephew, about nine years of age, who had a complaint of that kind. It was for so young a subject very large, the sac very thin and transparent. I was informed by his father that it had been emptied in the country, that it had filled again in a few days, and that in a fortnight it was as large as ever. This account was confirmed by the surgeon who performed the operation: the shortness of the time in which the water had

re-accu-

re-accumulated appeared extraordinary, and very different from the common Hydrocele, which usually is filled by small, and often by scarcely perceptible degrees. Not long before, I had seen a complaint in a boy of about the same age, in which there was some similarity of circumstances with the present case, and which an attempt had been made to cure by incision, but it filled again; after which it was simply let out by a trochar, and the water returned in a very short time. This was supposed to happen from a communication with the abdomen, by which opening moisture, collected within the peritoneal lining of the abdomen, was said to drop down into the tunica vaginalis testis, and thus again quickly to distend it. Though I had not an opportunity of being completely satisfied of the nature of that case, I thought probably this arose from a similar cause, whatever that might be; at least it

was evident that there were some peculiarities attending it, and therefore, though pressed to perform the operation of injection, I declined doing it at first, and advised the simple evacuation, to give me an opportunity of observing the manner of its refilling, and also of taking it at a more favourable period, when it should not be so much distended. Accordingly I let out a considerable quantity of a straw-coloured fluid, and found the testis in a good state. The next day some water was palpably collected, and in two days after, there was a considerable quantity—in less than a fortnight it was nearly as large as when I let it out. These circumstances being new, and as I had not performed it on so young a person, I thought proper to mention them to his friends, and not to give positive or even sanguine hopes of success. When the operation was resolved on, he caught the measles, which obliged us to defer it.



it. July 25, he was sufficiently recovered to undergo it; accordingly I let out the water, and introduced the injection of nearly the usual strength. He complained of some, but not violent pain, for a few minutes. In six minutes it was discharged; in the evening a small degree of inflammation had taken place on the part; the following day it was increased in size equal to what it was before it was emptied. The little patient had a perfectly good night, and had not felt any pain since the operation. As he was becoming rather heated, though, as I conceive, more from the irritability of constitution, which he derived from the measles, of which he was just recovered, than from the inflammation of the part, which was moderate and perfectly indolent, a clyster and some saline draughts were administered. In the evening he was cooler and perfectly easy, the part rather more swelled, but without pain or

apparent inflammation. The third day from the operation it continued to increase, and the whole scrotum was considerably tumefied, and seemed aggravated by the fever, which still continued. I could not but look on the fever as independent of the complaint, as there was no inflammation or pain attending which could cause it. The 4th day the fever was much better, and the swelling began to diminish, and so continued in a gradual state of subsidence. On the 7th it was evidently much diminished, and in a fortnight was reduced to little more than the previous distention of the tunic might be supposed to produce—he soon after got well enough to be sent to school. November 9th, his father assured me he continued well; I have seen him since, and he remains perfectly free from any vestige of a Hydrocele.

## CASE XXXII.

AUGUST 4, 1791, I injected the Hydrocele of a young man of the family of his Grace the Duke of B. which I had once previously evacuated, and had suffered to gain a moderate size. He felt some pain during about half an hour, in the afternoon—in the evening was perfectly easy; a slight inflammation had seized the part, which was increased the next morning, attended with some swelling, but no pain. It went on as usual, and though the man took improper liberties in using great exercise, particularly by running up and down stairs very early after the operation, no accident occurred, and he got perfectly well.



## C A S E XXXIII.

OCTOBER 28, 1791, I was desired to see a gentleman in Artillery-Place, who had a very large Hydrocele, of the cause of which he gave the following account: that he was asleep in his bed-room up two pair of stairs, when he was alarmed with his house being on fire; he ran to the window and opened it, at the instant a large quantity of spirit of turpentine below stairs took fire, and made a violent explosion; excessively terrified, and scarcely awake, he threw himself out of the window, and fell into the road. Though bruised and injured in the greatest degree in many parts of his body, limbs, and face, he miraculously recovered. Soon after he was able to move about, he perceived a swelling in the scrotum, which increased to a great degree, and formed a Hydrocele. This, at different periods, he had suffered to be evacuated

euated six times. Tired of the continuance  
 of so great an inconvenience, he wished to  
 have a radical cure performed, and disapprov-  
 ing of the usual methods, he preferred the  
 mode by injection. It had now been col-  
 lecting nine months, and was so large that I  
 doubted of the success, but as I had succeeded  
 in one of greater magnitude, and he was de-  
 sirous to try it, I was induced to make the  
 attempt. He was of a fallow unhealthy com-  
 plexion, having never perfectly recovered of  
 his internal bruises; and I was informed that he  
 was of a very irritable habit, and had always  
 felt great pain after the simple evacuation. I  
 therefore prepared the injection much more  
 diluted than usual. I let out above three half  
 pints of a greenish fluid, and returned a large  
 quantity of injection. He now complained  
 of considerable pain leading up toward the kid-  
 ney on the same side, but he said little more  
 than he had been accustomed to feel from  
 simple

simple evacuation. After detaining the injection the usual time he was put to bed; as he still continued to feel pain, an opiate was given. However, as I afterwards learned, he grew sick, as was his custom after the simple evacuation, and brought up the opiate, so that its effect was lost, and as it was not repeated, his pain continued. In about three hours it left him; he passed a good afternoon and an easy night; the next day I found him with the scrotum considerably enlarged and tumefied, but perfectly easy.—The following day it was more enlarged, being more than half the size before the water was evacuated. On the 4th day, as I had left him so well the day before, I missed seeing him; but on the 5th, I found that he had been seized with sickness, a complaint to which he was very subject, and had vomited incessantly for two hours, notwithstanding every assistance from his very intelligent apothecary. He was languid, the  
part



part was considerably more swelled, and he felt a pain in the chord leading toward the kidney and bladder. It was however, on the whole, much better than could have been expected from such violent efforts of straining. A stool was procured by a clyster, and the next day he was better, the tumor nearly the same. November 10, he still complained of pain in the chord, which was harder, and had partaken more of the inflammation than usual, owing to the violence of vomiting, and the whole tumour continued very large. 11th, The gentleman informed me that it was certainly diminishing. On enquiring why he spoke so positively, he informed me that when it was at the largest he had measured it by a rule, when it was in length seven inches and a half by sixteen inches in circumference, that now it was six inches and a half in length; and afterwards it continued to lessen daily near half an inch in length, and something more  
in

in diameter. Thus by line and rule we were satisfied that the size of the tumour arose from inflammation only, and not from accumulating fluid. 16th November, it was lessened to four inches and a half by ten; in about a week after it subsided to less than three inches; soon after he got perfectly well, and has continued ever since free from any fresh collection. This is an instance of the impropriety of performing the operation on a Hydrocele when so much distended. I was induced to do it by the desire of the patient, but it is better to take an opportunity when it is smaller, as the quantity of inflammation, and the continuance of it, is generally in proportion to the size.

#### CASE XXXIV.

OCTOBER 30, 1791, A gentleman from a distant county shewed me a Hydrocele, with  
an

an intention of submitting to a radical cure; but as it was remarkably large, and had not before been evacuated, I persuaded him to have it simply let out, and to wait till it should fill again to a more moderate size. At the instant when the trochar was passed in, he jerked back with such velocity as to pull it out again, by which means only a part of the water was drawn off, so that there was not sufficient to admit of any other operation, nor was it totally emptied. Nothing remarkable appeared in the fluid which came away, and it was determined that the radical cure should be performed when more should be collected. He went into the country, and returned February 11, 1792. The tumor was not quite so large as before, and in every respect a good subject for the operation which it was agreed to perform. As he appeared to be of a disposition timorous and easily susceptible of alarm, and as he had given me the slip on the former occasion,



occasion, with a view to effectually secure him, he was laid on a bed. The trochar was then fairly passed in, the water all drawn off, and thus the most difficult part of the operation being over, no doubt was entertained of the completion of it: Accordingly I began to throw in the injection; the first syringe full was nearly thrown in, when he said he felt a pain, and being greatly alarmed, he contrived to draw himself backward with velocity on the bed. When he was quiet I attempted to throw in more, but soon perceived that what passed from the syringe did not fill the sac; it was now evident that in the effort which he had made he had forced the canula out of the sac, and it was in vain to endeavour to throw in more. This was an embarrassing circumstance, however the only thing which remained to be done, was to get it out again both from the sac and also what was diffused in the cellular membrane of the

scrotum,

scrotum, lest by remaining it should do mischief by raising an inflammation, as was mentioned to have happened in Case No. XXI. Accordingly I pressed it out of the sac, and it formed a small swelling at the lower part of the scrotum; this I opened with the point of a lancet, and emptied as accurately as I was able, by taking great pains, and repeated pressure, which was necessary, as it was not in one cavity, but diffused through the cells: this was continued till it became nearly of the size of the other testis. I then left it, much doubting if sufficient had been thrown into the sac to complete the cure. In the evening he complained of a good deal of pain in his back. In a few days the scrotum became moderately tumefied, and the testis appeared enlarged—a sign that some injection had entered. The inflammation continued moderate, both in the testis and scrotum; he got up the third day, and was free from

B pain,

pain, but the part was very tender on being touched; the testis gradually subsided, but a slough took place in the lower part of the dartos, where the injection had been, which by degrees came away; and what appeared to be part of the tunica vaginalis, followed by the same wound, which soon after contracted and healed, and he got perfectly well.—I have thought proper to mention this case fully, that, should such accident again occur, we may be aware of it, and endeavour to avoid the effect of it, by getting out as much of the injection as possible; if it had been suffered to remain, the inflammation and sloughs would have been much more extensive and mischievous. With the attention I paid to avoid such effects, the cure was completed with little more inconvenience than would have happened from the application of Mr. Else's caustic. But I have since thought I might still have succeeded better if I had thrown in

warm



warm water to have diluted what necessarily remained behind, and then have endeavoured to have again pressed out the dregs.

### CASE XXXV.

NOVEMBER 9, 1791, A French gentleman, driven from his country at the age of sixty-three, shewed me a Hydrocele of moderate size, which he said had been collecting about two months since it had been last evacuated; being desirous of obtaining a radical cure, I let it out and filled it with injection. He complained of little pain, which went off before it was discharged. I saw him in the evening, he said his pain had continued about an hour, but that he was then perfectly easy. The testis was beginning to swell a little; this continued to increase so gently, that he got up the second day, and was not conscious of any thing but a sense of weight in the part.

This continued to the seventh day without appearance of diminution. He was then attacked with a fit of the gout, for which he increased his quantity of wine; this, with an obstinate costiveness which ensued, brought on a pain in the part for two or three days. By paying attention to his general health this went off, and the swelling began visibly to diminish. By the end of the month he got perfectly well.

#### CASE XXXVI.

DECEMBER 17, 1791, I evacuated the Hydrocele of a young man at the hospital: the testis was larger than natural; but as no material disease appeared to affect it, I filled it with injection. He suffered little or no pain, but walked by choice down stairs and up another pair to his own ward. The third day the inflammation was gentle and moderate; the  
seventh

seventh it continued swelled without pain. In about a fortnight this man was entirely well.

### CASE XXXVII.

IN FEBRUARY 10, 1792, I assisted a gentleman in injecting the Hydrocele of a middle aged man. The observation I made at the time was, that the cannula of the trochar was pressed with too great violence against the testis both before the evacuation and afterwards, from which I apprehended more inflammation than usual. This accordingly happened, but was of little consequence, as it soon subsided by the ordinary means, and I only cursorily mention it by way of caution. The 26th I saw him; the testis was nearly of its natural size, and there was not the smallest appearance of a return of water.



## C A S E XXXVIII.

MARCH 4, 1792, I performed the cure by injection on the Hydrocele of Col. ———, which I had previously evacuated several times. There always remained a considerable tumour or swelling after it was emptied, owing to the great thickness of the sac, and a fullness about the chord, chiefly owing to obesity; but as the testis appeared to be in a good state, I did not hesitate to use the injection. He complained of considerable pain and sickness, which lasted about two minutes, but got better before it was evacuated. Soon after he went to bed he felt a good deal of pain in the neighbourhood of the kidneys, which he said was like what he had felt in fits of the gravel. I saw him in the evening; he was perfectly easy, and passed a good night. Next morning the testis was gently tumefied, which increased

creased by next day. The third day he said he had felt more of the gravelly pain, and had voided some gravel, and was after that perfectly easy. The testis was swelled, but scarcely tender to the touch. This case proceeded remarkably well. The Colonel's active disposition gave him little quarter. The fourth day I found him in his study amusing himself with books and the conversation of his friends. The sixth day from the operation the testis began to subside. On the ninth he went out in his carriage; and in a few days the testis was nearly subsided; and though he paid little more attention to it, but walked and took his usual exercise, and lived in his usual manner, the complaint gave him no trouble afterwards, nor has there ever been the smallest return of water.

## CASE XXXIX.

The following Case differed from the generality of those I have described, and had many peculiarities in its nature, progress, and cure.

I was desired to perform the radical operation on the Hydrocele of a gentleman from Scotland. The tumour certainly had the appearance of a Hydrocele, but on examining it, felt heavy, and had not the feel of water alone, but as if an enlarged testis made part of the disease. I mentioned my suspicions, and said the evacuation of the water only could determine the propriety of attempting the radical cure. I let out about three ounces of straw-coloured fluid from the lower part of the tumour, but found I had not evacuated the whole swelling. On examining I found another Hydrocele of the chord, perfectly separate and independent of the other, and the testis itself much indurated and enlarged, I  
let



let out about two ounces from the superior Hydrocele, but on account of the diseased state of the testis, advised no further operation. In consultation with a physician, he was put under a course of cicula and mercurial frictions. The testis in one week became less, and the water did not appear to return. However, after several weeks had elapsed, the water began again to collect in small quantity in the lower tumour, and the upper became as large as ever; it was now determined that he should leave off the mercury and cicula, and from an idea that it might arise from a scrophulous disposition, he was advised to try the effect of sea bathing. As the superior tumour began to be inconvenient from the size, I let it out the day before he intended to go. No inflammation having followed the former puncture I expected none from this, therefore saw no more of him; but was surprised to receive a letter from Brighton, informing me that he had felt some pain in the part during  
the

the night after the puncture, and that it was inflamed in the morning, notwithstanding which he sat off and travelled the whole way—when arrived the part was greatly swollen and painful, and, in short, he was confined to his bed; the inflammation increased, and an abscess formed, which was opened. As soon as he was able he returned to London. I found the superior Hydrocele divided through its whole extent; this soon granulated and healed. The collection which was again beginning below, and also a disposition to a Hydrocele in the other testis, disappeared.

#### CASE XL.

MARCH 10, 1792, I evacuated the water from the Hydrocele of a middle aged man at the hospital, which had not before been emptied. He complained of some pain during the evacuation, apparently more from apprehension than reality, as he said he felt but little more when the injection was introduced.

introduced. After the proper time it was discharged, when being relieved from his fears, he became easy. The next day he said he had felt pain for about an hour in the afternoon, but since had continued easy. The part appeared gently tumefied; it grew larger for four or five days; by the seventh it was so much lessened, that the man had liberty to walk about as usual, and was discharged in a fortnight.

#### C A S E XLI.

MARCH 13, 1792, Another unfortunate French gentleman, forced to abandon his native country, shewed me a Hydrocele of uncommon size; he said it had been before let out, but had been now three years collecting; it was larger considerably than his head, yet he contrived to keep it out of sight by a bandage that drew it backward. It was much too large to admit of any thing but the simple evacuation, which accordingly I did with a large  
trochar,



trochar, and let out more than six full pints of water tinged with blood, which he attributed to a bruise which he had received in it lately. The testis was in a good state, the chord enlarged and sufficiently elongated to admit of the testis lying at the bottom of the swelling. Notwithstanding the immensity of the tumour before evacuation, the scrotum almost immediately contracted to a small size; I wished to have observed the further progress of this extraordinary case, but have since had no opportunity of seeing it.

#### C A S E XLII.

The Rev. Mr. ——— had a large Hydrocele, which I had emptied in June 1791. As he was desirous now to get rid of it entirely, I was induced to use the injection, though it was larger than I should have preferred, and by pressure it was apparently divided into two  
tumours,

tumours, but the communication was evident, and they both were emptied by a puncture in the lower part. I threw in the injection, and he complained of a good deal of pain for a couple of minutes, but was easy before it was let out. He passed a good night and got up the next day; the third day the part was tumefied, but so easy that he dressed himself and came down into the coffee room where he lodged. The following day he chose to take a long walk, and continued to follow his amusements as usual, only complaining of a little tenderness of the part on being handled. Notwithstanding the little care he took of himself no material interruption to the progress of the cure took place; in less than three weeks he returned into the country well.

## C A S E XLIII.

SECOND CASE OF ENCYSTED HYDROCELE OF  
THE TUNICA VAGINALIS TESTIS.

JULY 1, 1792, A gentleman applied to me with a Hydrocele which had once before been emptied. It was pretty large, but what made it remarkable was, that the testis could be felt distinctly under the tumour, so that the water appeared to be collected in the chord, but yet the swelling could not be distinctly separated from the upper part of the testis. It was sufficiently evident that the cavity of the tunica vaginalis testis was not the seat of the complaint. He wished the injection to be used. I thought proper to inform him that this was not a common case; but as I had succeeded in one where the water was collected in the chord, I had hopes of being equally successful in the present; and as the



coats of the testis were not affected, I imagined the sensation which the injection would produce would be in a very small degree. I let out about five ounces of water ; when the injection was introduced, he complained, as I expected, of very little pain ; he went to bed to meet any pain which might arise, but he continued easy all the afternoon ; the next morning I found him up and dressed. The part was attended with some swelling, which continued increasing to the sixth day, when he complained of some uneasiness, and was glad to keep his bed for a few days, which, with the assistance of a saturnine application, soon reduced it. After which it gradually subsided as a common hydrocele, and in less than three weeks he went out of town. The chord rather larger than the other, but without the least appearance of a fresh collection of water.

I hope

## C A S E XLIV.

I hope Mr. Dunning will excuse the liberty I take in giving the following obliging letter in his own words.

S I R,

I take liberty to communicate the following cure of Hydrocele, because it is the first case, I believe, in this neighbourhood in which the injection has been used. This circumstance is not enough perhaps to justify me in giving you this trouble; I will not therefore add to the interruption by making any longer apology, but will just observe, that as I write from a principle of respect, I shall be extremely sorry to offend.

A gentleman of great respectability, about two months since, consulted me for a Hydrocele. He had noted the first approaches of it about a year ago, and could not refer it to  
any

any cause within his knowledge. As the case was fairly marked, and he was a temperate middle aged man, of good constitution, I immediately proposed the radical cure by a small caustic as recommended by Mr. Else, a practice I had hitherto adopted, and always with very complete success. My patient now put into my hands your valuable Treatise, said it had made a wonderful impression on his mind, that he was very unwilling to submit to any other method of cure than that by injection, and earnestly requested me to read the Essay. I never read any thing with more satisfaction, for, partial as I was to the caustic, all my prepossessions in its favour immediately gave way to the superior advantages of care and expedition, which so remarkably characterize your management of the complaint. Accordingly on the 10th of December ult. having drawn off by the trochar seventeen ounces of a bright citron coloured fluid, I injected about eight or

C

ten



ten ounces of wine and water in the proportion of two parts of the former to one of the latter. The gentleman spoke of considerable pain on the introduction, and indeed during the retention of it, which was precisely five minutes; the pain, however, soon left him. The accession of inflammation was announced the next day by a slight thickening of the parts only; indeed it was so moderate, and the whole process had been so gentle, my patient, apprehensive that a sufficient degree of excitement had not been produced, did absolutely on the second day exercise himself about the room, with a view to increase the irritation, and it was from this conduct, I believe, that he complained the following day of some pain along the course of the spermatic process, which, however, soon went off. About the fifth day the tumefaction had attained its height; the scrotum was now about the size of a middling man's fist, attended with rather  
a sense

a sense of fulness than of any pain; it continued in this state two or three days, and then going off gradually in the cleverest way imaginable. At the end of a fortnight from the commencement of the cure, my patient had to congratulate himself on the riddance of a disease, which had long given him the greatest anxiety. When I reflect on the ease and simplicity of the operation, which really is not more formidable than that of common blood-letting, and oppose to it the many painful and operose modes of cure hitherto, and indeed at this time too often employed, the cure by injection appears in a most striking point of view, must be ranked among the greatest improvements of modern surgery, and commands the gratitude of mankind. I have too long trespassed on your attention, shall therefore beg leave to subscribe myself,

Yours, &c.

Plymouth Dock,  
Dec. 8, 1792.

RICHARD DUNNING.

P. S. I got a trochar made longer than is usually employed, with three lateral apertures about an inch from its extremity; by this contrivance I evacuated the whole of the injection without running any risk of the trochar's slipping from the scrotum.

#### C A S E XLV.

NOVEMBER 10, 1792, A person applied with a very large swelling, which appeared so hard and heavy, that there was every reason to suspect that the testis bore the greater share; however there was evidently some fluid, which it was agreed to evacuate. On passing in a trochar a larger quantity of fluid came away than was expected. The tunica was remarkably thick, which had made the feel of the fluid obscure; and the testis was very large, but as no pain nor any bad circumstances attended, it was determined to proceed no further,



ther, but to endeavour to soften and lessen it by medicine, which was the more likely to be effected now that the pressure of the water was removed. No means that were used had any apparent effect, as the water soon began to reaccumulate, and in six weeks there was as large a quantity of fluid as before. On being now more certain of the nature of it, I again let it out, and as the testis, though enlarged, was still without pain, I was tempted to endeavour to cure the Hydrocele. It was certainly a very unfavourable case, and not unlikely to bring discredit on the injection, as I could scarcely have room to hope that the very thick tunica and enlarged testis would unite. I threw in injection; he complained of more pain than usual; when it was evacuated he was easier, but still in pain. He went to bed and was ordered an opiate, but by the mistake of the nurse it was not given, so that his pain, not being at all checked, continued longer than necessary;

necessary; however he was perfectly easy in the evening, and passed a good night. The next morning the testis was swelled more than usual, probably owing to the greater length of time the pain had been suffered to remain, and to the diseased state of the parts; the inflammation and swelling also remained longer than usual, and there was reason to suspect that the water was again collecting: however after nine days the swelling began to diminish.

When it was considerably subsided, and no water was felt, the testis continued so large and hard, and the patient complained that it would be so exceedingly inconvenient to him in his business, that it was in consultation agreed to be removed. On passing in a trochar to ascertain the fact of the water being gone, about one ounce of deep straw-coloured fluid came away; as this diminished the size of the testis, which, though enlarged, did not now  
feel

feel scirrhus or dangerously diseased, I was again induced to try if any means could further reduce it; accordingly I ordered what I have repeatedly known of great service in these cases; small quantities of mercurial ointment to be rubbed into the thigh: by continuing this process a sufficient length of time, the testis subsided, and became so small as to take away every reason for the removal of it, and there was not the smallest return of water; thus, both the Hydrocele and Sarcocoele being cured, he took leave of me, happy and well.

As this was the most unfavourable case I ever trusted the injection in, I shall close my account with it, though there have been many more cases under my own care, and more have come within my knowledge, which have succeeded; but I do not think it necessary to trouble the reader with any further relation of them.

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Such has been the success which has followed this mode of practice; and though there are who still prefer the painful operation of dividing the scrotum and laying bare the testis, or the tedious, loathsome cure by caustic, I have the pleasure to know that many practitioners have followed the plan recommended in my treatise on this subject, and have succeeded to their complete satisfaction. And hereafter, when contemporary prejudices are laid aside, and old habits, though strongly woven, are worn out; when all the different methods of curing the Hydrocele shall have been fairly and impartially tried; I have the gratification to think that the pains I have taken to introduce a mild and easy method will not be in vain.

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THUS

THUS terminated the Appendix to the former edition, and I had taken leave of the subject, but some circumstances having led me again to take it into consideration, I conceive that I shall improve considerably the utility of the foregoing work, by making an addition of a few more cases, selected from a great number, either on account of some particular circumstances attending them—or to point out the ill effects arising from a mode which has sometimes been adopted of performing the operation—or to throw more light on a fact which, as I have stated in the preface, appears to me of considerable importance.

The two first short cases are introduced merely to shew the ease with which the operation was conducted, and the little confinement which was necessary to complete the cure.

## CASE XLVI.

JUNE 1793. A gentleman lately from the West Indies had a moderate sized hydrocele, which he wished me to cure by injection. The day was fixed for the operation, when, from indisposition, I was unable to leave my house. As the gentleman had made his arrangements for the purpose, and it would have been inconvenient to him to postpone the operation, I agreed to perform it at my house. He complained of little pain, and afterward walked to his lodging, which was not far off. He staid at home all the afternoon, was generally on the bed, in expectation of pain, which however was very inconsiderable. The tumor, as usual, became gently inflamed, and increased in size till the fifth day, when it began to subside: after which he found so little inconvenience that he was able to go out in his carriage, and also



also to walk in his ordinary way. Though the liberty my patient took in using exercise so soon produced no material mischief, it probably prevented the swelling from diminishing so quickly as it would otherwise have done, yet in less than three weeks it became so small as to convince him that he was cured of his hydrocele, and he continues perfectly well.

#### CASE XLVII.

DECEMBER 30, 1793, I let out a large quantity of water from the hydrocele of the Rev. Mr. —, and returned some injection. He felt little pain either during the operation or afterwards. On the fourth day from the operation he walked between two and three miles, and continued afterwards to go out every day. Notwithstanding which the swelling came on gradually, and so retired.

The liberty he took prolonged the cure, but he got perfectly well in about three weeks.

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The three following cases point out the danger of letting out the water by a cutting instrument, and shew the unfitness of a flat trocar to convey injection for the radical cure of the hydrocele.

#### CASE XLVIII.

FEBRUARY 1794. Col. ——— applied for cure of a hydrocele which had been three times relieved by the palliative method, and which after the last time, to his surprise, was renewed in a day, the tumor having been nearly as large as when he shewed it to me. I suspected this to have been caused by the infusion of blood from some vessel opened in the operation, and was less surpris'd at this accident when I was informed that the puncture had been made with a flat trocar. On  
passing

passing in my trocar my suspicions were confirmed by the discharge of a large quantity of blood mixed with some water; I saw no reason to doubt of the injection succeeding in this state of the case, but as I had not tried it under such circumstances, I thought it prudent to defer the radical cure till the bag should be again filled, particularly as my patient made no objection to the delay. From this time he was too much engaged to notice his complaint, till June following, when it became so considerable as to arrest his attention. On the 17th of that month, his activity making him unwilling to lose a day, I made use of the injection at night. He felt little pain in the operation, none after, slept as usual, and in the morning was refreshed and well, a little tumefaction only appearing on the part. In the afternoon he got up and went into another room, the next day I found him perfectly easy and transacting business, in the evening he sent for



me in haste, and informed me that the commander in chief had granted him this time to undergo the operation as the most leisure, and when his presence would be least liable to be required, but that, contrary to expectation, his corps was suddenly called out to active service. He seemed much distressed at being absent on the occasion, said he found himself easy, and was determined immediately to get into a chaise and join his regiment. Representing strongly to him the danger he would incur by such a step, I prevailed on him not to go. The agitation of his mind on this occasion raised a little fever, which however was soon calmed. He passed a tolerable night, the next morning was cool and temperate, and the part slightly swelled. After this time, though my patient's active disposition made me apprehensive of too great inflammation, the symptoms proceeded much to my satisfaction, and at the end of a fortnight he left London. I saw him the

succeeding

ucceeding autumn, in every respect perfectly well.

Some time since I had occasion to see another hydrocele which had been tapped by a lancet, by which a blood vessel was opened in its passage, and the tunica vaginalis in a few hours became distended with blood to such a degree as to cause great pain and inflammation. The blood was suffered to remain several months, till it became partly consolidated and partly organised, and produced such hardness and apparent disease as to make it necessary to extirpate the testis. Several other instances of nearly a similar nature I could enumerate arising from the use of a lancet or a flat trocar.

#### CASE XLIX.

MARCH, 1794, I saw a gentleman, in consultation, who had a hydrocele of a singular nature on each side; in both the water  
was

was collected in the chord, yet seemed to be in contact with the upper part of the testis, the body of which was plainly perceptible from not being surrounded with fluid. We agreed, with the approbation of the patient, simply to evacuate one, and to use the injection in the other. The left tumor was accordingly punctured, and about two ounces of clear straw coloured fluid was evacuated; the other was also emptied and filled with injection. He felt some little pain and sickness, which soon went off; I saw him next morning, when he said he had not had occasion to take the opiate, which was prescribed if necessary, and had passed a good night. The part continued swelling about four days; it then began to diminish, and soon subsided.

The other hydrocele which had been relieved by the simple puncture, became enlarged from the increase of its contents, and  
in



in about six weeks was of sufficient size to admit of the cure by injection, which was accordingly determined on. The surgeon who performed the operation thought proper to use a flat trocar, which let out the contents very well, but on throwing in the injection it appeared that the sac was not distended by it; a second syringe-full was then injected. This also did not appear to distend the bag, but part of it ran back again, and on opening the stop-cock none returned through the cannula, which was therefore withdrawn, and it was evident that great part of the injection had found its way into the cellular membrane of the scrotum; by repeated pressure this was in a great measure evacuated through the puncture, but sufficient remained to produce an obstinate swelling, which continued indeed without much inconvenience, till at length it was dissipated: the hydrocele on that side however returned,

whilst

whilst the other which was completely injected was effectually cured.

#### CASE XL.

The next case, besides shewing the fault of the flat trocar, is well worth notice on account of the extraordinary size of the disease, and other circumstances, which will be told in as concise a manner as possible.—In November, 1795, I saw, in consultation, a gentleman who came from Barbadoes expressly for the radical cure of a hydrocele of long standing. The state of his health was bad; he said he had been much troubled with bilious complaints, which his countenance testified, being yellow as saffron. The tumour was very large and misshapen, evidently shewing that though it contained much fluid, the testis made a very considerable part of it. He had also a hydrocele on the other side, too small at that time to be an object of cure.

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Though the gentleman anxiously wished to have the radical cure performed, that he might return to his family, I strongly recommended the palliative cure to take place first, on account of the size of the tumour, and also that I might have an opportunity of examining the state of the parts: accordingly it was performed, and a very large quantity of fluid was let out highly tinged with bile. The mass which remained was a testis greatly enlarged, with the coats prodigiously thickened, but in no part giving the idea of scirrhus, or active mischief of any kind. It was therefore agreed to endeavour to cure the hydrocele by injection, when it should again be large enough to admit the trocar.

I saw him again in about a month, when it appeared that the tumour had filled so rapidly, and grown already to such a size, that I recommended the radical cure without further



further loss of time. Accordingly I attended to assist at the operation, which was performed with great dexterity and propriety; but the trocar which was used being flat, and consequently cutting as it went in, the opening which it made in the tunica vaginalis did not bind sufficiently on the cannula; so that when the operator had thrown in some injection, I observed that part of it returned; and though he threw in the contents of several syringes, made with the vegetable bottle, he was never able to distend the bag. The upper part consequently was not affected by the injection, the patient complained of a good deal of pain, which continued for a short time after he was put to bed. Some inflammation followed, and there was hope that this might be sufficient to produce a cure; but *in a fortnight* a fluctuation became evident in the upper part, though an adhesion or consolidation seemed to have taken place

on the testis. It was therefore determined to make a further trial so soon as sufficient fluid should be collected to allow the instrument to be introduced with safety.

This interval was thought favourable for performing an operation on his negro servant, that he might be well time enough to attend his master in his next operation. This man had a hydrocele of uncommon magnitude, and in a very relaxed state, the testis also was nearly as large as his master's. On the whole it was as discouraging a case, and as unlikely to be cured by injection, as any I had ever attempted. However it was agreed to give him the chance. January 1st, 1796, a great quantity of fluid was let out, and a large relaxed bag was left, with a testis equal in size to the largest baking pear, and something of that shape. The injection was properly thrown in by means of a round cannula, and

and retained: he suffered very little pain, went to bed, and was treated as usual. In ten days from the operation he was able to go about his business and wait on his master. The hydrocele was perfectly cured, but the testis remained of a large size, and was suspended in a bag.

The man being well, the master determined to undergo the second operation; accordingly, January 14, a proper round trocar was used. A considerable quantity of fluid was evacuated from the tumor, which seemed principally to have its seat in the chord, though the testis was of a great size, and the tumor consequently remained very considerable after the water was drawn off. On throwing in the injection it was remarkable that the patient was not sensible of the smallest pain, which being so contrary to what he had felt in the former operation, agreeably surprised him. This circumstance



stance I readily accounted for, and it is well worthy of being remarked, as it tends to prove what I have always suspected, but have never had an opportunity of ascertaining, that the cure by injection is caused by adhesion. In the present case it seemed beyond a doubt that by the adhesion of the tunica vaginalis to the testis in the first operation, the injection in the second was shut out and prevented from touching the testis, which is the only part sensible to the stimulus of the injection, so that by the adhesion this which originally was a hydrocele of the tunica vaginalis testis, appeared to be converted into a hydrocele of the chord, in which the injection never causes any pain.

When the injection had remained the usual time it was withdrawn, and the other testis examined. It appeared that the hydrocele was now grown large enough to allow of the introduction of a very small trocar,

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which

which was accordingly done, and about two ounces of fluid were discharged. The testis was rather larger than natural, but in a sound state. On throwing in some injection, he complained of more pain than is usually expressed; perhaps to his sensation it might be somewhat increased by contrasting it with the ease which attended the operation on the other side. The tumours on both sides gradually increased to a large size; in about a fortnight from the operation they began to subside, and gradually diminished, leaving not the smallest doubt of the Hydrocele being perfectly cured on both sides. I have had several opportunities of seeing both these patients since; in each of them the size of the testis continues to lessen, and they are preparing to recross the Atlantic. On considering all the circumstances of the preceding cases, I shall leave it to the judgment of other practitioners to determine whether any

any operation but a mild injection could with safety or impunity have been practised.

### CASE LI.

Two cases will be now related to prove the little disturbance or mischief which ensues from the fluid of a hydrocele being let out from the tunica vaginalis testis, and suffered to remain diffused through the cellular membrane of the scrotum.

JULY 9th, 1793, I examined the hydrocele of a gentleman in the city, which had twice been suffered to grow so large as to have been burst by some accidental blow, so that the fluid found its way into the cellular membrane, and remained there, without producing any considerable inconvenience, until it was absorbed. To prevent a similar accident in future, I let out about four ounces of fluid, and intended to throw in the same quantity of injection, but found



that the gentleman who assisted me had suffered the syringe to be half filled with air. The pain which he felt was very slight, and the inflammation which followed equally moderate. On the day after the operation he went down stairs, and on examining the part on the 9th day the tumour did not diminish, as is commonly the case. Whether this was owing to its having burst before, or to air having been introduced, it was difficult to say; but it had for a longer time than usual an appearance as if more water was forming. The swelling however at last gradually subsided, and in about five weeks he was cured. The gentleman whose case is here related, I have by chance had an opportunity of seeing this day, April 6th, 1796, and he assures me that he continues perfectly well.

## CASE LII.

In the autumn 1793, a trocar was passed into a hydrocele. After the first gush no water followed, but the scrotum became greatly tumefied; on this occasion I was called in, and found that the cannula had slipped out of the tunic, and that the scrotum was filled with the effused fluid. The cannula was withdrawn, and we endeavoured to press out some of the fluid by the orifice; but as this method was more likely to do harm than good by bruising the parts, I advised nothing more to be done, only recommending a discutient application. The water gave no trouble, and was absorbed. When the hydrocele was again sufficiently full the operation of injection was performed, and the patient got perfectly well, notwithstanding he was attacked a few days

after the operation by a violent fit of the gout, to which he had been often subject.

### CASE LIII.

The next case is noticed on account of the tardiness with which the inflammation came on, owing to some particular circumstances.

A gentleman about seventy years of age, who had passed many years in the East Indies, shewed me a large hydrocele, which I evacuated several times at different intervals. The repetition becoming irksome and disagreeable to him, he asked me how long I thought he would be obliged to submit to this palliative method. I informed him that probably it would be necessary to have recourse to it during the remainder of life, and related a case in point of a gentleman who applied to Mr. Pott for the radical cure of a hydrocele, about the year 1762; being then  
 sixty



sixty years of age, Mr. Pott thought him too old to undergo so severe an operation as the incision, which at that time was usually practised; and advised him not to submit to it, but to be content with the palliative cure. The gentleman found it necessary to visit Mr. Pott for this purpose four times a year during the remainder of Mr. Pott's life. He has since done me the honour to call on me at about the same intervals: though now in his ninety-fourth year, he is able to walk with activity, and the faculties of his mind are unimpaired and vigorous. I am glad of an opportunity of producing this instance, as it may be a pleasing satisfaction to many, who think their life and health concerned in this complaint, to shew that it does not affect either the one or the other, and that the constitution receives no injury from it.

When my patient heard the account, and was sensible of the great probability of the

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continuance of his complaint, he desired to have the radical operation performed if I thought he was not too old. I informed him that the operation which I had to propose might be performed without danger at any period of life; on which he agreed to submit to it. January 3d, 1794, the injection was made use of, which caused very little pain; and he was so easy afterwards that I did not find it necessary to give him an anodyne. He passed a good night, and the next day, as there was neither pain nor swelling, left his room. The following day there was so little appearance of inflammation, that, fearing there would not be sufficient, I advised him to live in his usual manner, and drink some wine. Several days however passed without any appearance of inflammation. I was considering how to account for this, when I observed that he generally sat with the door partly open, that there was a current of cold  
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air, and that he complained of his legs and feet being cold. Whether this circumstance, or his advanced age, prevented the access of inflammation, I could not say, but thought it right to recommend him to keep himself warmer. At the distance of ten days from the operation, some degree of inflammation arose, and the whole tumour gently swelled, exactly as is usual immediately after the operation. He felt no pain, but the tumour, as it had been remarkably lingering and tedious in its access, was equally slow in its progress and retreat; however, it at length subsided, and he got perfectly well by the 16th of February, and has continued so ever since.

#### CASE LIV.

In the next case it will appear that the injection succeeded after other methods of cure had been attempted.

FEBRUARY



FEBRUARY 25, 1794, I was desired by his benevolent master to see the hydrocele of an Indian boy, which was very large, and on which the operations of the caustic and of the incision had been separately tried, in this country, and had failed. On the 26th, I let out a considerable quantity of water, but not in proportion to the size of the tumour, which was in a great degree kept up by a very large testicle, and great thickness of the scrotum and tunica vaginalis. As it appeared to me that these circumstances probably were more owing to the repeated inflammations which the parts had undergone, than to disease, I was not deterred from risking the credit of the injection.—He complained of a little pain during the operation, but felt none after it. On the third day from the operation, the tumour was increased to a considerable size, which was treated in the usual way, and the hydrocele did not return. The testis

testis however continued very large; but as the pressure of the water was removed, and as I had conceived there was no inherent disease in the gland, by the assistance of proper discutients he became perfectly well, to the entire satisfaction of his master, William Burke, Esq. whose name I am at liberty to use on this occasion.

#### CASE LV.

The succeeding account is attended with some peculiarities, and may be the means of putting persons on their guard who may be obliged to operate under similar circumstances.

APRIL 14, 1794, Mr. — had a hydrocele on each side, which I had evacuated several times. On the right was a hernia, which in the infancy of both swellings he had been able to keep up with a truss, but as the protrusion became larger, and the hydrocele also increased

increased in size, it was by degrees difficult, and latterly impracticable, to apply a truss, so as to keep the protruded intestine within the abdomen. On this account, though otherwise not inclined, he wished to undergo the radical cure of the hydrocele. I was aware that I might meet with some embarrassing circumstances in this complicated case, but the necessity outweighed the difficulty, and I proposed to cure it by injection. In order to do this, I returned the protruded parts within the abdomen, and directed an assistant to support, and keep them from coming out again. Having successfully evacuated the tunic, I threw in some injection, which gave him some pain; on increasing the quantity he started involuntarily, and by the exertion his rupture was forced down, which pressed on the tunica vaginalis, and drove out the cannula. By this accident a stop was put to the operation, and some of the injection  
passed



passed into the cellular membrane of the scrotum. This in a great measure was pressed out through the opening made by the trocar; sufficient however remained, to cause a dull, painless tumour, which was not very inconvenient, and did not prevent the gentleman from going out as usual. At the end of five weeks there was an evident fluctuation, some matter was discharged, attended with a slough of part of the tunica vaginalis, soon after which the wound healed, and the hydrocele was cured. Notwithstanding the accident, I am confident that this case was attended with less pain and inconvenience, than would have been caused either by the caustic, seton, or incision. I may add that this day, April 17th, 1796, I have seen this gentleman, and have had the satisfaction of knowing that he continues perfectly well.

## CASE LVI.

In the following case the injection appears not to have been completely successful.

OCTOBER 1793, I evacuated the hydrocele of Mr. —, let out about half a pint of fluid, and returned some injection; he complained of a little pain, and some inflammation followed, which gradually and favourably subsided. In about the usual period he got apparently well, but some time afterwards a small tumour appeared in the lower part of the scrotum. On examination I plainly perceived that an adhesion had taken place all round the testis, but in the lower part a small distinct tumour was formed, filled with fluid.

It will appear from the case above recited that the operation of injection is not infallible. At the same time, I can with confidence add, that this is the only instance, selected from nearly one hundred cases, which  
I have

I have treated in this way, in which it has not completely succeeded, and I have no doubt but that if I had had an opportunity of repeating the injection in this case, that the cure would have been accomplished.

#### CASE LVII.

The next case points out the danger of letting the fluid remain too long in the sac of a hydrocele, and may not be an uninstruative instance to both patients and surgeons.

1794. A gentleman, aged about 60, shewed me a very large hydrocele, which he said had been twice evacuated. The first time by the late Mr. Pyle, the second time, at the distance of some years, by the late Mr. Watson; when a thick dark-coloured fluid came away. It was now four years since the last operation. The whole tumour felt so hard and heavy, and had so little the appearance of a hydrocele, that I suspected, though the sac might contain



contain a considerable quantity of fluid, that the testis would be found in a very diseased state. After having fully explained my ideas of the case, I introduced a trocar, which passed in with difficulty, as if going through buff leather, and nearly a pint of fluid, thick, and coloured like chocolate, was discharged; after this evacuation a large tumour was left perfectly insensible; on withdrawing the cannula, it was so tightly clasped by the tunica vaginalis that considerable force was necessary to disengage it. I informed the patient that I was apprehensive the testis had received much injury, from the fluid being suffered to remain in too long: he said he had followed the advice of both his surgeons, not to have it let out till it became troublesome, and as it had given no pain, he had not attended to it.

I cannot pass by this opportunity without mentioning as my decided opinion, that it is extremely prejudicial to let the fluid remain

long in a hydrocele, as it must either distend the sac to an immoderate size, or if the tunica vaginalis be sufficiently strong to resist the pressure, it will become extremely thickened, and the counter pressure will equally thicken the tunica albuginea, and the whole body of the testis will become enlarged.

No inflammation or ill consequence followed the puncture, and the gentleman went into the country, where he caught cold, attended with a considerable degree of fever, in consequence of which an inflammation took place in the scrotum, and was followed by a mortification, by which the tunica vaginalis partially sloughed. The hydrocele was cured, but a large discharge of matter continued to come away from the body of the testis, and the whole tumour remained very large.

On consultation with Mr. Howard it was agreed that the extirpation of the testis was the only means left to restore the patient to

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health, or indeed to save his life. When the parts had regained a quiet state, the operation was performed. In the body of the testis a quantity of matter appeared to have been collected, and on the surface of the tunica vaginalis, which was of an immense thickness. several ossifications were formed. The gentleman got perfectly well; and I should not have given this long history, but to shew the effects which I conceive to have been produced by suffering the fluid to remain too long in the sac, for as far as we could judge from previous circumstances, and actual appearances, there was no reason to think that there was original disease in the testis, but that this was brought on by pressure, and had the tumour in its early stage been treated properly as an hydrocele, it was highly probable that so severe an operation as the extirpation of the organ might have been prevented.



The remaining cases prove the innocuous yet powerful effect of the injection, which is recommended, and that it may most advantageously and safely be employed where it would be in the highest degree hazardous to perform the operation of incision, or indeed any of the other ordinary means of cure.

#### CASE LVIII.

NOVEMBER 1793. In my absence Mr. Harvy injected the hydrocele of a patient in the hospital, who had also considerable disease of the testis. The gland partook of the inflammation, and the whole appeared in a few days as large as before the water was evacuated; in a fortnight it was evident that no fluid was collected, but that the whole tumour, large as it was, consisted of the testis only; this remained stationary many weeks, but by persevering in rubbing mercury into the thigh, and keeping him in a

horizontal position, it gradually lessened till it became nearly of its natural size; and the man went out cured of both diseases.

If this had been opened by incision, and the testis *inspected*, I believe few practitioners would have thought it right to attempt the cure of the hydrocele only, and have left the testis in so enlarged and indisposed a state.

#### CASE LIX.

JUNE 21, 1794, I let out a large quantity of fluid from the hydrocele of a young man at the hospital. I found the testis large, and the tunic remarkably loose and flaccid, so much so, that I despaired of its being capable of contracting and adhering to the testis, and of perfecting a cure. However, as there was neither pain nor partial hardness in the testis, and as I had succeeded in some cases nearly as bad, I determined to  
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use the injection. No pain was felt either at the operation or afterwards, and very little inflammation ensued. At the end of a fortnight the disease appeared to be returning; after waiting a little time we did not perceive any accumulation of water to take place: but the testis continued so large that the patient complaining that it would absolutely prevent him from getting his bread, desired to part with it, and the operation was resolved on; but as the mercurial frictions began to take effect, and the tumour seemed to lessen, the extirpation was postponed; after which it gradually lessened, and actually became of a moderate size; and being in a perfectly easy and indolent state, the patient left the hospital.

#### CASE LX.

JULY 6, 1794, the porter of Mr. Martindale applied to me with two hydroceles of  
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#### CASE LX.

JULY 6, 1794, the porter of Mr. Martindale applied to me with two hydroceles of  
such

such magnitude, and so unseemly an appearance, that he said no person would hire him. Both were emptied, and the testes were found prodigiously enlarged. He suffered them to fill again to the same size, when I proposed to him to go into the hospital, to obtain a radical cure. It being extremely hot weather, it was thought advisable not to operate on both at once; the left side therefore was simply evacuated, the other, though so large as to be very unfavourable for any operation, was filled with injection, which was made particularly strong. This man felt little pain either at or after the operation, the part became inflamed, and swelled to nearly its original size, and gradually subsided without the occurrence of any particular circumstance, except that the progress of the cure was slow, and of longer duration than usual, which from the size of the tumour was to be expected. The uninjected side,



side, not at all affected by the neighbouring inflammation, through the whole process was lax, and soft, and so continued till it gradually filled with fluid.

October 1st, it was nearly as large as ever, when I let out a pint of fluid, and afterwards used a strong injection. He scarcely felt any pain, the inflammation came on gradually, and proceeded in every respect like the other. He remained in the hospital some time after the hydroceles were well, to give time and opportunity for the size of the testes, which were still of great bulk, to be lessened: with the assistance of ung. hydrarg. they were in no great length of time much diminished; when they became of moderate size the man left the hospital, happy in having got rid of two grievous burthens.

#### CASE LXI.

The following is the last case I shall notice, as no instance can more strongly prove  
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the facts which I have endeavoured to establish.

JULY 16, 1795, a gentleman applied to me for the radical cure of a hydrocele. I plainly perceived a large quantity of fluid in the tunica vaginalis, but also suspected much disease of the testis. His state of health was at that time extremely bad, he was gouty, rheumatic, and debilitated to a great degree; on these accounts, and to have an opportunity of examining the state of the testis, I recommended the fluid to be simply let out; accordingly a pretty large quantity of fluid was evacuated, which however appeared to have constituted not more than one third of the tumour; the remainder consisted of a testis much enlarged. So soon as his general health by the assistance of Dr. Turton was restored, he rubbed small quantities of mercurial ointment into the thigh, and such applications were made to the part as were most capable of assisting in its diminution.

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In about six weeks the sac became again so full as to require to be evacuated. As we were now perfectly acquainted with the diseased state of the parts, nothing but the palliative cure was thought of. On tapping it, however, we were pleased to find that the water bore a much greater proportion to the size of the tumour, than at the first evacuation, making now at least half the bulk of the whole. The testis also was considerably smaller. As these appearances were so favourable, and his health grew better, he pursued the same plan. The latter end of August he went to the sea-side, and used the warm sea bath; still continuing his gentle mercurial frictions. In October he returned to London in good health, and determined to get rid of his hydrocele by the radical operation. Before I would agree to this, I desired a consultation might be held, and in the presence of two other surgeons I let out



the fluid, when it was unanimously agreed that the testis was not in a state to bear the irritation of any method of curing the hydrocele, but was not so diseased as to require removal.

The water soon beginning to collect again, he grew tired of the prospect of repetitions of the palliative cure, more particularly as the dread of having it performed by a stranger prevented him from going into the north, where he had business of consequence. Among many arguments to induce me to perform the radical cure, he observed that the testis always appeared to him to diminish most during the time that the fluid remained in the smallest quantity; that is, immediately after the evacuation. On attentive examination I thought his observation well founded, and conceived hopes that the total absence of the water might produce considerable effect, and perhaps cure the

complaint. As the water continued to collect, he became more anxious to have the hydrocele cured, and to take his chance about the testis, which was certainly become considerably less, and in a quiet state. On a second consultation it was agreed that the method by injection might be tried, but that no other operation could with any degree of safety or propriety be attempted, as there was not a question but that the loss of the testis would be the consequence. At the beginning of December I let out a large quantity of fluid, and found the testis somewhat less, and in a quiet state; I threw in some injection more diluted than usual. The pain which followed was very moderate and of short duration; the next day much inflammation had taken place, the tumour swelled to a considerable size but was perfectly easy. It continued increasing to the fifth day, when it began gradually to subside.

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At the end of a fortnight there was no appearance of water. The testis was smaller than at the time of the operation, and appeared to have received no injury from the inflammation which had been produced. It was however still much too large, but from that time gradually lessened to a moderate size. At the end of December the hydrocele was perfectly cured; the testis so free from pain, and attended with so little inconvenience, that the gentleman went out of town, and has since undertaken a journey to a great distance from London.



F I N I S.



